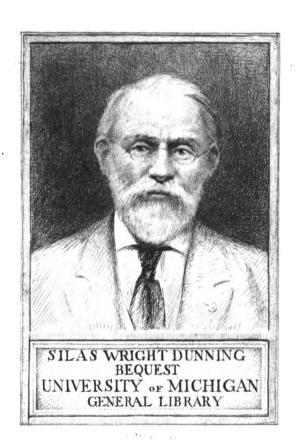
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### **JOURNAL**

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# United Service Institution of India

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238	Imperial Gazetteer of India	Official		1907- 08	I to XXIV	1
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245	Imperial Gazetteer of Rajputana.	Do		1908	1	1
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102 103	Notes on Field Artillery Tactical Employment of Art- illery as evolved on the Practice Ground and from the experiences of Modern War.	Spaulding, O. J. Budworth, Major C. E. M.V.O.	 D.,	1908 1908	1 1	2 1

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439	with a set of 5 maps. Questions on Franco-Prussian War in 1870, with a	Brunker, LtCol. H.M.E.	1909	1	1
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248	Bengal District Gazetteer, Sambulpore, Vol XVI.	Do.		1909	1	1
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255	Rajputana Gazetteer. The W. R. S. Residency and Bikanir Agency, Vols. III A and III B.	Do.		1908	1	1
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52	The Green Curve	Ole-Luk-oie	1909	1	1

The Council of the United Service Institution of India propose to issue to members and subscribers of the Journal the quarter's paraphlet prepared by the General Staff at Home entitled. Record Publications of Military Interest." This work contains reviews a real transfer important publications both British and Foreign. The state was are written by officers who may be admitted to be 2 compages of such matter, they therefore form a reliable guide as resolute to read which it is considered should be of peculiar value to officers in this country and would be appreciated by all members of the Institution. In order to cover the additional expenditure that will be involved it will be necessary to slightly increase the subscriptions, and it has been decided to obtain the views of members in regard to the proposed changes.

Life Membership in future to be Rs. 65 in lieu of Rs. 55 Ordinary members  $\frac{1}{2}$ ,  $\frac{1}{2}$ ,  $\frac{1}{2}$   $\frac{1}{2}$   $\frac{1}{2}$  Honorary members  $\frac{1}{2}$ ,  $\frac{1}{2}$   $\frac$ 

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#### W. A. STOKES, CAPLAIN

Secretary United Service Institution of In . :

22xn May, 1909.

LAME SHE

I am not in toyeth of the issue with the Journal et the United Service Institution of "Recent Publications of Military Laterest" and of the enhanced rates of subscription proposed by the Council as notified in the July market of the Journal Book.

Yours daily by

THE SUCKTIACY.

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### THE JOURNAL

OF THE

## United Service Institution of India.

# The Council have authorized the following alterations to the Regulations of the United Service Institution of India:—

Rule V, clause III, - Executive Committee. Para. 4 is reconstructed as follows: -

4 An Executive Committee consisting of a President and four members chosen from the Council, will be elected annually at the General Meeting of the Council, for the transaction of all the ordinary business of the Institution during the year. This Committee will elect from among their number, from time to time, three members to form a "Reading Committee" to consider articles submitted for publication in the Journal.

Rule VI-paras. 11 and 12 are reconstructed as follows -

- 11. Members are responsible that they keep the Secretary carefully posted in regard to changes of address.
- 12 Members or Subscribers to the Journal, Messes, etc., intimating, a wish to have their Journals posted to any address out of India, will pay in advance Rupce 1 per annum to cover foreign postage charges.

being dangerously III. 22nd.—That our army on this coast very strong and only for ye Morattoes entering ye country to advance this way. 23rd. – 30,000 Morattoes entered and plundered ye country to a considerable amount. Ye principal people in consultation; all ye Commandants ordered to attend ye several corps to be recruited as soon as possible.

26th.—That a French fleet on this coast being pursued by one of ours put in at Onore near Mangalore where she now remains blocked up.

27th.--Hyder leaving ye Carnatic on account of ye Morattoe news. 28th.—Guns heard at some distance. 30th.—50 Europeans arrived prisoners. 31st.—That we have taken a fort 12 coss from hence and a convoy of stores.

2nd Novr.—That ye Nyahs are plundering ye Coimbatore country; ye Ram Raja joined us Beddenore fort in our possession.

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### THE JOURNAL

#### OF THE

## United Service Institution of India.

Vol. XXXVIII.

January 1909.

No. 174.

THE DIARY OF COLONEL G. MASSY WHILST A PRISONER WITH HYDER ALI, 1780—1784.

(COLLECTED BY CAPT. C. C. R. MURPHY, THE SUFFOLK REGIMENT.)

### [Continued.]

1st October.—That ye Morattoes have refused permitting to Hyder to recruit men or horses in their country and have imprisoned ye people he sent for that purpose. Keyrim Saib missing. Tip on his way hither for Calicut. 7th.—The Raja's festival begins. 16th.—It concludes. 19th.—Subscription 1 fanam each fr. R. B. for correspondence.

20th.—x from ye soldiers. That 7 Europeans arrived prisoners ye 18th instant who were taken on ye last month, our army then near Parmacoil commanded by General Stewart, Sir Eyre Coote being dangerously ill. 22nd.—That our army on this coast very strong and only for ye Morattoes entering ye country to advance this way. 23rd.—30,000 Morattoes entered and plundered ye country to a considerable amount. Ye principal people in consultation; all ye Commandants ordered to attend ye several corps to be recruited as soon as possible.

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247	Imperial Gazetteer of India, Kashmir and Jammu.	Official	•••	1909	1	1
248	Bengal District Gazetteer, Sambulpore, Vol XVI.	Do.		1909	1	1
249	Imperial Gazetteer of India, Burma, Vols. I and II.	Do.	•••	1908	2	1
250	Imperial Gazetteer of India, Madras.	Do.	•••	1908	2	1
251	Imperial Gazetteer of India, Andaman and Nicobar Is- land.	Do.		1909	I	1
252	Imperial Gazetteer of India, Mysore and Coorg.	Do.	•••	1908	1	1
253	Imperial Gazetteer of India, Benares.	Do.		1909	1	1
254	Imperial Gazetteer of India, Monghyr	Do.		1909	1	1
255	Rajputana Gazetteer. The W. R. S. Residency and Bikanir Agency, Vols. III A and III B.	Do.		1908	1	1
256	Rajputana Gazetteer, 1908. The Mewar Residency, Vol. II A. and B.	Do.		1908	1	1
257	NW. F. Gazetteer, Kurram Agency.	Do.		1908	1	1
258	NW. F. Gazetteer, Peshwar District, Statistical tables, 1904.	Do.		1908	1	1
259	Hoshangabad District Gazet- teer.	Do.		1908	1	1

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395	The Military Cyclist's Vade Mecum.  Army Regulations, India Vol.	Trapmaun	1909	1	1
454	I, Pay and allowance and Non-effective pay.  Army Regulations, India, Vol. IX, Regulations for the Volunteer Forces.	Official		1	1
	Operation of War.	Hamley	1908	1	1
<b>665</b> 788	Times History of the war in South Africa 1899 and 1902, Volume VI and VII.	Amery, L. S	1909	2	2
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## THE JOURNAL

OF THE

# United Service Institution of India.

# The Council have authorized the following alterations to the Regulations of the United Service Institution of India:—

Rule V, clause III, - Executive Committee. Para. 4 is reconstructed as follows:-

4 An Executive Committee consisting of a President and four members chosen from the Council, will be elected annually at the General Meeting of the Council, for the transaction of all the ordinary business of the Institution during the year. This Committee will elect from among their number, from time to time, three members to form a "Reading Committee" to consider articles submitted for publication in the Journal.

Rule VI-paras, II and 12 are reconstructed as follows -

- 11. Members are responsible that they keep the Secretary carefully posted in regard to changes of address.
- 12 Members or Subscribers to the Journal, Messes, etc., intimating, a wish to have their Journals posted to any address out of India, will pay in advance Rupce 1 per annum to cover foreign postage charges.

being dangerously ill. 22nd.—That our army on this coast very strong and only for ye Morattoes entering ye country to advance this way. 23rd.—30,000 Morattoes entered and plundered ye country to a considerable amount. Ye principal people in consultation; all ye Commandants ordered to attend ye several corps to be recruited as soon as possible.

26th.—That a French fleet on this coast being pursued by one of ours put in at Onore near Mangalore where she now remains blocked

up.

27th.--Hyder leaving ye Carnatic on account of ye Morattoe news. 28th.—Guns heard at some distance. 30th.—50 Europeans arrived prisoners. 31st.—That we have taken a fort 12 coss from hence and a convoy of stores.

2nd Novr.—That ye Nyahs are plundering ye Coimbatore country; ye Ram Raja joined us Beddenore fort in our possession.

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### THE JOURNAL

#### OF THE

## United Service Institution of India.

Vol. XXXVIII.

January 1909.

No. 174.

# THE DIARY OF COLONEL G. MASSY WHILST A PRISONER WITH HYDER ALI, 1780—1784.

(COLLECTED BY CAPT. C. C. R. MURPHY, THE SUFFOLK REGIMENT.)

#### [Continued.]

1st October.—That ye Morattoes have refused permitting to Hyder to recruit men or horses in their country and have imprisoned ye people he sent for that purpose. Keyrim Saib missing. Tip on his way hither for Calicut. 7th.—The Raja's festival begins. 16th.—It concludes. 19th.—Subscription 1 fanam each fr. R. B. for correspondence.

20th.—x from ye soldiers. That 7 Europeans arrived prisoners ye 18th instant who were taken on ye last month, our army then near Parmacoil commanded by General Stewart, Sir Eyre Coote being dangerously ill. 22nd.—That our army on this coast very strong and only for ye Morattoes entering ye country to advance this way. 23rd. – 30,000 Morattoes entered and plundered ye country to a considerable amount. Ye principal people in consultation; all ye Commandants ordered to attend ye several corps to be recruited as soon as possible.

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4th.—Per R. B. × from ye sol. 50 European lads arrived prisoners from Mangalore. An engagement near Tygar, Tip lost his leg, his army beat by our Southern Army commanded by Coll. Harper. On this coast ye heavy artillery, &c., on this side ye Pass our army consisting of 2,000 Europeans and 12 Battn. of sepoys—5,000 children from ye Carnatic. 7th.—Hyder besieging Vellore. Tip at Trichinopoly.

13th. - Coll. Baillie died.

18th—× per Cock Eye from ye English Musselman enclosing × from ye midshipmen as follows, viz., ye ship Hannibal of 50 guns taken ye 22nd January 1782, Messrs. Lusage, Austin and Drake, midshipmen. Ye chaser of 18 guns taken ve 14th February; no officer of her here. Ye Rake Transport 6th June off ye Cape, Mr. Wilkinson, midshipman. Ye Resolution Transport 9th June. Mr. Hiddiman, master's mate. Ye Yarmouth and Fortitude Compy.'s ships 27th June.—Ye number of men belonging to ye ships here is 44 and officers belonging to ye King 5. In Febry. ye French fleet came on ye coast consisting of 12 sail of ye line and ye English of 9; they had an action ye 17th Febry. which lasted  $3 \& \frac{1}{2}$  hours and on ye 12th April ye English of 11 and ye French of 12 sail engaged near Trincomale for 5 & ½ hours, ye French much damaged, and on ye 28th June they engaged off Cuddalore with ye same ships as before for 2 hours, one fr. 64 struck but she was covered by her own ships, another 64 dismasted. Ye English have driven ye French off ye coast. Ye 30th June ye French sent all their prisoners ashore at Cuddalore and delivered them into ye hands of Hyder who marched us to Chillumbram, the 12th August marched us to Bangalore, and on ye 20th October they picked out all of ye smallest of ye men and officers and marched us to Seringapatam. On ye 7th Novr. they shaved our heads and on ye 10th they made us Musselmen; since we have been here they have given us some dungherry and mats to sleep on. Ye 7th Novr. ye Town Mayor came to us just before they shaved our heads and told us we were never to be released but to be kept here and to be as ye Nabob's sons which makes usvery unhappy thinking we shall never see our native country again, but when you are exchanged we hope that you will make our case known to our fellow subjects. We are all exceedingly sorry to hear of Coll. Baillie's death. Mr. Austin would be glad to hear from you if agreeable.

<sup>×</sup> from Messrs. Speediman and Rutledge. We were yesterday agreeably surprised by receiving × from you which has been our constant wish ever since we have been here, and are extremely obliged to you for ye trouble you must undoubtedly have had in forwarding it, having made many attempts of that kind ourselves but never could succeed, but particularly for ye concern you feel



on our account and ye promises you make us of representing our situation to those in whose power it will be to extricate us out of this dilemma. You have requested of us to relate to you ye particulars of our ill fortune and also to answer some questions which you have set down, both of which we will readily comply with as far as lies in our power, and we are sorry we cannot give you as satisfactory an account as you might probably expect, being wounded in Jan. last and left in Vellore, but what news we send is what we get from Ensign Byrne who came up to Vellore in June with 1 Co. of sepoys, 33-prs. and a good many Polligars with provisions for ye garrison and we being anxious to join ye army left Vellore to go back with him, but we had not quitted ye above 18 hours when Tippu Saib's whole force came down upon us. We fought them for some time, then ye Polligars left ye Co. in a mob (with what intention God knows), but they were scarcely 500 yards away before ve enemies' horse cut in upon them and what escaped ye sword were made prisoners. In this situation deserted by them, most of our sepoys wounded and our ammunition nearly expended, we hoisted a white handkerchief for quarter, which they granted immediately, and we were made prisoners by a French officer and Byrne by a Black Commdt. While we remained in Tip's camp we were very well used, but when we arrived at his father's we had reason to repent ve exchange receiving only a measure of rice and a pice a day. We however continued with him only for 5 days, ye last of which in ve evening, we were sent for by Hyder's devan, who ordered Mr. Rutledge only in irons, but both of us to be put among a parcel of small boys along with whom we found Sergt.-Major Groves of Coll. Braithwait's detachment. Next morning about 2 o'clock we marched for Seringapatam. After 4 or 5 days' march we were overtaken by Byrne and Lt. Ornitser of ye cavalry who with a troop belonging to ye grand guard near Arnee were cut off and which is probably what has been represented to you as a regiment of cavalry, there having been no other accident of ye kind. We were a good deal surprised to find that Byrne and us were bound for different places, but never guessed their horrid intentions with regard to us until our arrival at Seringapatam, when instead of being put amongst you, we were marched with ye boys into a large square building about a mile eastward of ye fort, where we found 9 Europeans and were rendered almost speechless when they told us that they were all made Musselmen against their inclinations and it was most likely we should share ye same fate, which proved to be the case. During ye time we were with them we would take nothing from them but rice, nor would we permit them to take off our irons (which they often offered to do) lest they should imagine we were contented with our situation. We now receive a fanam a day and are obliged to drill a number of boys sent from ye Carnatic. Thank God what they know will never do ye Compy. any harm. (Europe, &c. News comes in here.) 'An extract. Ye French tho' effectually drove off ye coast have unluckily fallen in with 2 or 3 transports bound in ye

fleet, out of which together with ye crew of ye Hannibal, taken off ye Cape, they collected 500 men and officers, all of which they scandalously delivered over to Hyder; he has since picked out 51 boys and young men who are now in ye fort and have all been made Musselmen; among them are 5 midshipmen. It is not however to be doubted but ye French will suffer greatly in Europe for it. Permacoil taken and blown up by ye French, it capitulated for want Ye Carnatic army consists of 5 King's, one Bengal and one Madras Regiment, artillery for 65 pieces of cannon, about 9000 sepoys and 500 or 600 cavalry. General Cote commanded intolerable There was a salute fired for ye conclusion of a good health. Morattoes' peace while we were in Vellore, and it was strongly reported that General Goddard's army with a large party was to enter this country when ye season would permit it. Our army on this coast is said to amount to 8000 or 10000 men Hyder's 7000 in which number is included 13 European Musselmen and 500 Carnatic boys from ye squares; there are now 13 more Europeans and 400 stout boys expecting every day to be sent from here to join them.

> (Sd.) JAS. SPEEDIMAN. RICHD. RUTLEDGE.

#### COPY OF WOODLEY'S JOURNAL.

1782—14th March.—Assembled at Seringapatam under command of Beeffidar Cawn Jemidar, besides ye Chayla Battn., 200 horse, 3 Battn. sepoys with firelocks of about 500 men, 8 gunners and 12 Lascars, 4 rocket boys, 1 man with bow and arrows and 3775 Polligars, with matchlocks, pikes, &c. Total 5000. Our Park of Artillery Ordnance consisted of 4, 3-prs. iron. When our camp is pitched, it is all of a cluster, about 20 tents, an old marque and 1000 huts, agreeable to Sitaboys (Killedar of Seringapatam) orders, our victuals were cooked with ye Commandants and Subiders; however, they soon struck off that encumbrance and put us on ye line of ye boys, but this evening they had taken ye curry pot away and we were waiting a considerable time and they not serving themselves. Gun and Woodley seized it and ran off with it and served ourselves to ye great mortification of ye Commdts., Subiders and Myers, who swore they would be revenged of ye Feringees ye next day.

15th March.—Marched to Mysore. The old Commdt, agreeable to his vow of revenge yesterday, ordered the boys rice to be cooked for us; we all refused it, Higgins excepted. The Commdt. went to the Jemidar and informed him we had all been drinking Arrack; we were put prisoners 2 and 3 under centinel and our swords taken from us. About midnight they sent us some good rice, ye next day they released us and gave us our swords back; an order was issued to deter us from buying Arrack and Toddy.

17th.—Arrived at a fort where we received a reinforcement of a thousand from Chittledroog. Halted here 3 days and left 2 guns behind.

22nd.—Entered into very thick woods; after marching 8 miles into these woods, the Polligars in front were surprised by 80 of ye enemy ye Niars (by ye Moors called Mymars), a set of people formerly subdued by Hyder, now in rebellion; of this caste is our Commdt. and 2 Subidars; they discharged a few matchlocks and arrows at ye Polligars who came running back with their usual bravery; however, they were beat back again to ye attack with large bamboos and clubs by ye Woodiwallahs, &c., belonging to ye Chaylas, then a small skirmish ensued, and as ye Chaylas advanced ye English drum beat, ye enemy took to ye woods. Taken of ye enemy 7 (one of whom was hanged on a tree afterwards) and killed 10 of them. Halted at this place 2 days. 25th.—Marched near 12 miles and came upon 300 of ye enemy, a skirmish of quarter of an hour happened in which 5 of them were killed and 4 taken; we had 3 killed and wounded; ye enemy off to ye woods as before.

26th.—Marched off, taken 3 Niars who gave information of ye enemy being posted in a large village to ye right; upon our arrival there the enemy was fled. An alarm happened about midnight

but a false one, but our troops were very much frightened.

27th.—Ye 3 Niars taken yesterday were hanged; ye Europeans put under centinels to their companies on which we refused doing duty and gave up our swords, for which Higgins was bound with his hands behind his back all day. Inwood and Clements beat with rattans, and in ye evening after encamping we were all tied in one rope and were ordered to be beat; however, we received our swords and were acquitted.

28th.—Arrived at a small mud fort in which were 300 of ye enemy; they fired a few jingalls (for they had no guns) at our mob, and early in ye morning they quitted ye fort and escaped; at day light our people entered it and did not take one man, halted here 20 days, parties went out daily and brought in prisoners, some of whom were hanged and others discharged paying a fine of their ears, nose or left hand.

4th April.—About 500 of ye enemy in sight, ye troops being ordered for battle and ye enemy in ye bushes in front fired at them with ye 3-prs., afterwards advanced and platoon'd with small arms. They also fired pretty warmly some time, but being close pushed by our mob, they made off to ye woods; how many killed of them is unknown, 9 heads were brought in to ye Jemidar. Thus ended ye affair with ye Niars for this time.

18th.—We marched out of their woody country and on ye 21st April arrived at a fort called Goondull. Gunnr. Subidar was convicted before ye Jemidar of having endeavoured to persuade ye Chaylas to leave their guns and go to ye Niars being one himself; he was tied to a post and is reduced to a private sepoy, but is excused from duty by his brother Niar, ye old Commdt., on ye 4th instant.

23rd.—Arrived at ye fort we left ye 23rd March. Ye Jemidar ordered a sepoy to be beat in a barbarous manner by 4 men with large bamboos and then to be dragged round ye camp (by 6 men) on his belly, for cutting his wife with his sword in 2 or 3 places;

ye above orders were put in execution but ye man recovered.

24th.—Arrived at a fort at Perripatam, halted there 5 days. 1st May.—Marched to a village called Cittipore near which were ruins of a small fort which had been possessed by the Cooralner (another set of people formerly subdued now rebelling) who had deserted ve fort and fled. Ye country here as woody as ye Niar country, distant from Perripatam 20 miles. 2nd. - Arrived at a plain where ye Coorakee Raja joined our mob with 300 of his men armed with matchlocks and broad knives. Proceeded on till we came to a small fort built with large timber, in which were 250 Coorakees; some of our troops were despatched with 3 Compy.'s of Chaylas to fire musquetry at it under cover of a high bank, which was not ye least service, ye other 2 Compys. of ye lads staid in ye rear as a body-guard to ye Commander-in-Chief; ye enemy behaved resolute and obstinate; altho' they had no guns, they fired very hot from their jingalls and matchlocks; our 3-prs. scarce pierced ve timber. At night we draw off to encamp after firing away 8000 musquet balls in waste. During ye night ye enemy left ye fort and did not leave a man in their retreat, and at 6 o'clock in ye morning ye place was entered by 4 Compys. of Chaylas. Thus ended ye Coorakee affair for ye present. Within 16 miles of ye aforesaid fort are 20 Coorakees hanging on trees for their late insurrection. The Coorakee Raja and his men sent to Cittipore to settle there for their loyalty. The fort there has been built by them since.

6th.—Arrived at a stony fort called Marcary where several of ye Bramins had been defrauding ye troops who made their complaint to ye Jemidar; he ordered a lock of a firelock to be put on their ear and made them stand on one foot till they have agreed to make good the damage sustained by ye troops of ye town by their villany; in this place are 7 companies with firelocks lately come from Naggar, and a Portuguese Captain who commands 30 musties artillerymen. Halted here 8 days. Ye monsoon setting in ye mob ordered to Canton at Perripatam (till orders from ye Nabab) where a Tabila was built for ye Chayla Battn. where we arrived the 25th May 1782. What will be our next exploit God knows, but neither ye Niars or Coorakees are settled yet; after steering all points of ye compass we were about 40 miles from you. This is the plentifullest place we have seen since we left Seringapatam. Ye English actually in possession of Callicut. Ye name of ye English only strikes a terror into this mob in general. N.B.—This is ye most cowardly mob ever was known, from ye Commander-in-Chief to ye wild Polligar. On ye line of march we are always like straggling sheep.

21st August.—Intelligence came to ye Jemidar that a large body of Coorakees was assembling near Marcary, 3000 Polligars were detached from Perripatam cantonment and 300 sepoys with firelocks from Marcary.

24th.—They came up with ye enemy near a large river; they skirmished for near \(^2\) of an hour when ye Cocrakees charged and ye Polligars broke and ran, so were totally defeated, few escaped, about 50 of ye sepoys made their escapes and on ye 27 arrived safe at ye cantonment. 23rd Sept.—An Harcarra came in with intelligence that ye Coorakees had made an attempt on Cittipore with an intention to put to death ye Raja (ye loyalist) and his men.

26th.—The Jemidar marched with a mob of 4000 cowards (a greater one than himself does not exist) to Siclapore, 6 miles and encamped. 27th and 28th.—Continually skirmishing with ye enemy who often surprise our mob by springing out of ye jungle upon them; in ye evening of ye 28th arrived at Cittipore and relieved ye fort by leaving 250 sepoys in ye room of ye Raja and his men received in camp; our loss before we arrived here 30 men.

29th.—In ye evening ye enemy seen near our camp; the Jemidar ordered ye musick belonging to ye Matchlocks Infantry drums and Cavalry trumpets to be beat and sounded every gurry during ye

night in order to frighten ve enemy away.

2nd October.—Marched about 10 miles and found ye road stopt with large trees, &c., laid across it. During ye time ye labourers were clearing it away ye enemy fired very hot from both sides of ye road and put our negroes to ye route. Taking ye opportunity of our confusion they charged in ye rear, and took all our Beyzar and baggage; several severe skirmishes happened in our way to Cittipore, in which we had 1 European and upwards of 100 blacks killed, 3 Europeans and near 60 blacks wounded; in great confusion we arrived at Cittipore that evening where we remained 5 days, during which time a treaty of peace was concluded between ye Jemidar and Coorakee prince.

8th.—Our mob escorted by 3600 Coorakees on each flank within 5 miles of Perripatam. It was undoubtedly great folly in a Coorakee prince to let us come off so easily as they must have cut us off entirely if we had moved from Cittipore unless in ye manner here mentioned. Ye fort of Cittipore was given over to them as well as all other pretentions to their country.

10th.—2000 men joined at ye cantonment of Perripatam from Seringapatam and Hyder's camp. Perripatam is 150 miles from Callicut. I left ye cantonment ye 19th October 1782.

### (Signed) BENTAL WOODLEY.

N.B.—Ye aforesaid treaty will be broke of by Hyder as soon as ever he finds it convenient.

Extract of a letter from ye same, dated Perripatam cantonment, 25th July 1782, To ye same,—I assure you our situation is very bad, much worse than yours; Higgins and ye old Commdt.



300 boys prisoners from ye Carn. in an engagement; 20 days ago near Conjiveram we lost 5 guns, 30 Europeans and 500 sepoys.

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18th—× per Cock Eye from ye English Musselman enclosing × from ye midshipmen as follows, viz., ye ship Hannibal of 50 guns taken ye 22nd January 1782, Messrs. Lusage, Austin and Drake, midshipmen. Ye chaser of 18 guns taken ye 14th February; no officer of her here. Ye Rake Transport 6th June off ye Cape, Mr. Wilkinson, midshipman. Ye Resolution Transport 9th June. Mr. Hiddiman, master's mate. Ye Yarmouth and Fortitude Compy.'s ships 27th June.—Ye number of men belonging to ye ships here is 44 and officers belonging to ye King 5. In Febry, ye French fleet came on ye coast consisting of 12 sail of ye line and ye English of 9; they had an action ye 17th Febry, which lasted 3 & \frac{1}{6} hours and on ye 12th April ye English of 11 and ye French of 12 sail engaged near Trincomale for 5 & 1/2 hours, ye French much damaged, and on ye 28th June they engaged off Cuddalore with ye same ships as before for 2 hours, one fr. 64 struck but she was covered by her own ships, another 64 dismasted. Ye English have driven ye French off ye coast. Ye 30th June ye French sent all their prisoners ashore at Cuddalore and delivered them into ye hands of Hyder who marched us to Chillumbram, the 12th August marched us to Bangalore, and on ye 20th October they picked out all of ye smallest of ye men and officers and marched us to Seringapatam. On ye 7th Novr. they shaved our heads and on ye 10th they made us Musselmen; since we have been here they have given us some dungherry and mats to sleep on. Ye 7th Novr. ye Town Mayor came to us just before they shaved our heads and told us we were never to be released but to be kept here and to be as ye Nabob's sons which makes usvery unhappy thinking we shall never see our native country again, but when you are exchanged we hope that you will make our case known to our fellow subjects. We are all exceedingly sorry to hear of Coll. Baillie's death. Mr. Austin would be glad to hear from you if agreeable.

× from Messrs. Speediman and Rutledge. We were yesterday agreeably surprised by receiving × from you which has been our constant wish ever since we have been here, and are extremely obliged to you for ye trouble you must undoubtedly have had in forwarding it, having made many attempts of that kind ourselves but never could succeed, but particularly for ye concern you feel

on our account and ve promises you make us of representing our situation to those in whose power it will be to extricate us out of this dilemma. You have requested of us to relate to you ve particulars of our ill fortune and also to answer some questions which you have set down, both of which we will readily comply with as far as lies in our power, and we are sorry we cannot give you as satisfactory an account as you might probably expect, being wounded in Jan. last and left in Vellore, but what news we send is what we get from Ensign Byrne who came up to Vellore in June with 1 Co. of sepoys, 33-prs. and a good many Polligars with provisions for ye garrison and we being anxious to join ye army left Vellore to go back with him, but we had not quitted ye above 18 hours when Tippu Saib's whole force came down upon us. We fought them for some time, then ye Polligars left ye Co. in a mob (with what intention God knows), but they were scarcely 500 yards away before ye enemies' horse cut in upon them and what escaped ye sword were made prisoners. In this situation deserted by them, most of our sepoys wounded and our ammunition nearly expended, we hoisted a white handkerchief for quarter, which they granted immediately, and we were made prisoners by a French officer and Byrne by a Black Commdt. While we remained in Tip's camp we were very well used, but when we arrived at his father's we had reason to repent ye exchange receiving only a measure of rice and a pice a day. We however continued with him only for 5 days, ye last of which in ye evening, we were sent for by Hyder's devan, who ordered Mr. Rutledge only in irons, but both of us to be put among a parcel of small boys along with whom we found Sergt.-Major Groves of Coll. Braithwait's detachment. Next morning about 2 o'clock we marched for Seringapatam. After 4 or 5 days' march we were overtaken by Byrne and Lt. Ornitser of ye cavalry who with a troop belonging to ye grand guard near Arnee were cut off and which is probably what has been represented to you as a regiment of cavalry, there having been no other accident of ye kind. We were a good deal surprised to find that Byrne and us were bound for different places, but never guessed their horrid intentions with regard to us until our arrival at Seringapatam, when instead of being put amongst you, we were marched with ye boys into a large square building about a mile eastward of ye fort, where we found 9 Europeans and were rendered almost speechless when they told us that they were all made Musselmen against their inclinations and it was most likely we should share ye same fate, which proved to be the case. During ye time we were with them we would take nothing from them but rice, nor would we permit them to take off our irons (which they often offered to do) lest they should imagine we were contented with our situation. We now receive a fanam a day and are obliged to drill a number of boys sent from ye Carnatic. Thank God what they know will never do ye Compy. any harm. (Europe, &c. News comes in here.) 'An extract. Ye French tho' effectually drove off ye coast have unluckily fallen in with 2 or 3 transports bound in ye fleet, out of which together with ye crew of ye Hannibal, taken off ye Cape, they collected 500 men and officers, all of which they scandalously delivered over to Hyder; he has since picked out 51 boys and young men who are now in ye fort and have all been made Musselmen; among them are 5 midshipmen. It is not however to be doubted but ye French will suffer greatly in Europe for it. Permacoil taken and blown up by ye French, it capitulated for want Ye Carnatic army consists of 5 King's, one Bengal and one Madras Regiment, artillery for 65 pieces of cannon, about 9000 sepoys and 500 or 600 cavalry. General Cote commanded intolerable good health. There was a salute fired for ye conclusion of a Morattoes' peace while we were in Vellore, and it was strongly reported that General Goddard's army with a large party was to enter this country when ye season would permit it. Our army on this coast is said to amount to 8000 or 10000 men Hyder's 7000 in which number is included 13 European Musselmen and 500 Carnatic boys from ye squares; there are now 13 more Europeans and 400 stout boys expecting every day to be sent from here to join them.

# (Sd.) JAS. SPEEDIMAN. RICHD. RUTLEDGE.

#### COPY OF WOODLEY'S JOURNAL.

1782—14th March.—Assembled at Seringapatam under command of Beeffidar Cawn Jemidar, besides ye Chayla Battn., 200 horse, 3 Battn. sepoys with firelocks of about 500 men, 8 gunners and 12 Lascars, 4 rocket boys, 1 man with bow and arrows and 3775 Polligars, with matchlocks, pikes, &c. Total 5000. Our Park of Artillery Ordnance consisted of 4, 3-prs. iron. When our camp is pitched, it is all of a cluster, about 20 tents, an old marque and 1000 huts, agreeable to Sitaboys (Killedar of Seringapatam) orders, our victuals were cooked with ye Commandants and Subiders; however, they soon struck off that encumbrance and put us on ye line of ye boys, but this evening they had taken ye curry pot away and we were waiting a considerable time and they not serving themselves. Gun and Woodley seized it and ran off with it and served ourselves to ye great mortification of ye Commdts., Subiders and Myers, who swore they would be revenged of ye Feringees ye next day.

15th March.—Marched to Mysore. The old Commdt, agreeable to his vow of revenge yesterday, ordered the boys rice to be cooked for us; we all refused it, Higgins excepted. The Commdt. went to the Jemidar and informed him we had all been drinking Arrack; we were put prisoners 2 and 3 under centinel and our swords taken from us. About midnight they sent us some good rice, ye next day they released us and gave us our swords back; an order was issued to

deter us from buying Arrack and Toddy.



17th.—Arrived at a fort where we received a reinforcement of a thousand from Chittledroog. Halted here 3 days and left 2 guns behind.

22nd. – Entered into very thick woods; after marching 8 miles into these woods, the Polligars in front were surprised by 80 of ye enemy ye Niars (by ye Moors called Mymars), a set of people formerly subdued by Hyder, now in rebellion; of this caste is our Commdt. and 2 Subidars; they discharged a few matchlocks and arrows at ye Polligars who came running back with their usual bravery; however, they were beat back again to ye attack with large bamboos and clubs by ye Woodiwallahs, &c., belonging to ye Chaylas, then a small skirmish ensued, and as ye Chaylas advanced ye English drum beat, ye enemy took to ye woods. Taken of ye enemy 7 (one of whom was hanged on a tree afterwards) and killed 10 of them. Halted at this place 2 days. 25th.—Marched near 12 miles and came upon 300 of ye enemy, a skirmish of quarter of an hour happened in which 5 of them were killed and 4 taken; we had 3 killed and wounded; ye enemy off to ye woods as before.

26th.—Marched off, taken 3 Niars who gave information of ye enemy being posted in a large village to ye right; upon our arrival there the enemy was fled. An alarm happened about midnight

but a false one, but our troops were very much frightened.

27th.—Ye 3 Niars taken yesterday were hanged; ye Europeans put under centinels to their companies on which we refused doing duty and gave up our swords, for which Higgins was bound with his hands behind his back all day. Inwood and Clements beat with rattans, and in ye evening after encamping we were all tied in one repe and were ordered to be beat; however, we received our swords and were acquitted.

28th.—Arrived at a small mud fort in which were 300 of ye enemy; they fired a few jingalls (for they had no guns) at our mob, and early in ye morning they quitted ye fort and escaped; at day light our people entered it and did not take one man, halted here 20 days, parties went out daily and brought in prisoners, some of whom were hanged and others discharged paying a fine of their ears, nose or left hand.

4th April.—About 500 of ye enemy in sight, ye troops being ordered for battle and ye enemy in ye bushes in front fired at them with ye 3-prs., afterwards advanced and platoon'd with small arms. They also fired pretty warmly some time, but being close pushed by our mob, they made off to ye woods; how many killed of them is unknown, 9 heads were brought in to ye Jemidar. Thus ended ye affair with ye Niars for this time.

18th.—We marched out of their woody country and on ye 21st April arrived at a fort called Goondull. Gunnr. Subidar was convicted before ye Jemidar of having endeavoured to persuade ye Chaylas to leave their guns and go to ye Niars being one himself; he was tied to a post and is reduced to a private scroy, but is excused from duty by his brother Niar, ye old Commdt., on ye 4th instant.

23rd.—Arrived at ye fort we left ye 23rd March. Ye Jemidar ordered a sepoy to be beat in a barbarous manner by 4 men with large bamboos and then to be dragged round ye camp (by 6 men) on his belly, for cutting his wife with his sword in 2 or 3 places;

ye above orders were put in execution but ye man recovered.

24th.—Arrived at a fort at Perripatam, halted there 5 days. 1st May.—Marched to a village called Cittipore near which were ruins of a small fort which had been possessed by the Cooralner (another set of people formerly subdued now rebelling) who had deserted ve fort and fled. Ye country here as woody as ye Niar country, distant from Perripatam 20 miles. 2nd. - Arrived at a plain where ve Coorakee Raja joined our mob with 300 of his men armed with matchlocks and broad knives. Proceeded on till we came to a small fort built with large timber, in which were 250 Coorakees; some of our troops were despatched with 3 Compy.'s of Chaylas to fire musquetry at it under cover of a high bank, which was not ye least service, ye other 2 Compys. of ye lads staid in ye rear as a body-guard to ye Commander-in-Chief; ye enemy behaved resolute and obstinate; altho' they had no guns, they fired very hot from their jingalls and matchlocks; our 3-prs. scarce pierced ye At night we draw off to encamp after firing away 8000 musquet balls in waste. During ye night ye enemy left ye fort and did not leave a man in their retreat, and at 6 o'clock in ye morning ye place was entered by 4 Compys. of Chaylas. Thus ended ye Coorakee affair for ye present. Within 16 miles of ye aforesaid fort are 20 Coorakees hanging on trees for their late insurrection. The Coorakee Raja and his men sent to Cittipore to settle there for their loyalty. The fort there has been built by them since.

6th.—Arrived at a stony fort called Marcary where several of ye Bramins had been defrauding ye troops who made their com-plaint to ye Jemidar; he ordered a lock of a firelock to be put on their ear and made them stand on one foot till they have agreed to make good the damage sustained by ye troops of ye town by their villany; in this place are 7 companies with firelocks lately come from Naggar, and a Portuguese Captain who commands 30 musties artillerymen. Halted here 8 days. Ye monsoon setting in ye mob ordered to Canton at Perripatam (till orders from ye Nabab) where a Tabila was built for ye Chayla Battn. where we arrived the 25th May 1782. What will be our next exploit God knows, but neither ve Niars or Coorakees are settled yet; after steering all points of ye compass we were about 40 miles from you. This is the plentifullest place we have seen since we left Seringapatam. Ye English actually in possession of Callicut. Ye name of ye English only strikes a terror into this mob in general. N.B.—This is ye most cowardly mob ever was known, from ye Commander-in-Chief to ye wild Polligar. On ye line of march we are always like straggling sheep.

21st August.—Intelligence came to ye Jemidar that a large body of Coorakees was assembling near Marcary, 3000 Polligars were detached from Perripatam cantonment and 300 sepoys with

firelocks from Marcary.

24th.—They came up with ye enemy near a large river; they skirmished for near \(^2\) of an hour when ye Cocrakees charged and ye Polligars broke and ran, so were totally defeated, few escaped, about 50 of ye sepoys made their escapes and on ye 27 arrived safe at ye cantonment. 23rd Sept.—An Harcarra came in with intelligence that ye Cocrakees had made an attempt on Cittipore with an intention to put to death ye Raja (ye loyalist) and his men.

26th.—The Jemidar marched with a mob of 4000 cowards (a greater one than himself does not exist) to Siclapore, 6 miles and encamped. 27th and 28th.—Continually skirmishing with ye enemy who often surprise our mob by springing out of ye jungle upon them; in ye evening of ye 28th arrived at Cittipore and relieved ye fort by leaving 250 sepoys in ye room of ye Raja and his men received in camp; our loss before we arrived here 30 men.

29th.—In ye evening ye enemy seen near our camp; the Jemidar ordered ye musick belonging to ye Matchlocks Infantry drums and Cavalry trumpets to be beat and sounded every gurry during ye

night in order to frighten ve enemy away.

2nd October.—Marched about 10 miles and found ye road stopt with large trees, &c., laid across it. During ye time ye labourers were clearing it away ye enemy fired very hot from both sides of ye road and put our negroes to ye route. Taking ye opportunity of our confusion they charged in ye rear, and took all our Beyzar and baggage; several severe skirmishes happened in our way to Cittipore, in which we had 1 European and upwards of 100 blacks killed, 3 Europeans and near 60 blacks wounded; in great confusion we arrived at Cittipore that evening where we remained 5 days, during which time a treaty of peace was concluded between ye Jemidar and Coorakee prince.

8th.—Our mob escorted by 3600 Coorakees on each flank within 5 miles of Perripatam. It was undoubtedly great folly in a Coorakee prince to let us come off so easily as they must have cut us off entirely if we had moved from Cittipore unless in ye manner here mentioned. Ye fort of Cittipore was given over to them as

well as all other pretentions to their country.

10th.—2000 men joined at ye cantonment of Perripatam from Scringapatam and Hyder's camp. Perripatam is 150 miles from Callicut. I left ye cantonment ye 19th October 1782.

### (Signed) BENTAL WOODLEY.

NB—Ye aforesaid treaty will be broke of by Hyder as soon as ever he finds it convenient.

Extract of a letter from ye same, dated Perripatam cantonment, 25th July 1782, To ye same,—I assure you our situation is very bad, much worse than yours: Higgins and ye old Commdt.



form our cap when marry has first and all scale versions our cap when marry has first and all scale versions as a first that has been dead out to be considered and scale of the faram. For and the scale of the Common and Scholers like officers but we are not a more carry made of dilonky, 5 were of these only for 500 men per capt he had not any meat but twice these 2 months part on annon account it caps us misers excepted all our 8 dubs and 3 caps for actually we are treated if by ye old Common, who has now for command of ye Buth, we have now only at exercise. The Joundar Commander-in-Chief answers all our complaints with jon jon.

Your news surprise us greatly; it is not believed by Higgins or ye N. Brettons, however we hear very different news here, but cannot assert ye ambority of it, viz., ye French joined ye English, Lally deserted to them also. Hyder in his own country, the English army at Trinomally. McKennon was wounded atshot thro' ye arm with a musquet ball by one of our own mob. The Jemidar made him a present of a red turban and a pair of gold heads value 10 paga; all ye boys that were wounded received a present of silver bangles to wear round, their arms value 26 rupees. In ye night of ye 25th June, Smithy, Green, Clements, Anderson, Wyley, McKenzie and your humble servant endeavoured to venture towards Callient with a determination to extricate ourselves out of Hyder's vervice; after walking by ye light of ye moon about 6 coss thro' ye thickest woods, were surprised by wild elephants and tigers, by accident lost our bread which made us conclude to turn back ngain. Accordingly did so and it seems Higgins being afraid lest we should get into trouble, reported as gone to Seringapatam to complain of ye Jemidar's usage. Ye horse being sent out after us met as about 5 miles from ye cantonment and brought us into ye Jemidar; we said, by way of defence, that we had been out shooting, having a carbine and 2 pistols with us, but having 2 shifts of cloaths on us, we were stript and all tied in one rope. 100 of ye stoutest of our hoys received each a twig of tamarind tree and served us out a lach each. I was cut from ye nape of ye neck right down ye back and have recovered ye flogging too, thank God. We have no centries over us for about a fortnight before we began this adventure, now we cannot go out of ye Tabelah without one. Pray what do you think of this adventure ( (Signed) BENTAL WOODLEY.

<sup>×</sup> from D ---r accompanying ye foregoing ×. Gentlen,—your ×s received. Messrs Speediman and Rutledge having answered your several questions so fully concerning ye present war subsisting between ye Compy, and Hyder that anything that I could further add would be nothing more than mere repetition; if I don't mistake

they have omitted making mention of anything appertaining to a peace; such a thing is not talked of and from what I have collected from a Sergt, who arrived here a few days ago, and has shared ye fate common to ye rest of us here, it seems that things don't wear any tolerable complexion owing to ye arrival of ye French; inclosed you have an account from ye unfortunate midshipman of ye 3 several engagements that happened between our fleet and that of ye French, together with a list of both. I shall never omit any opportunity of conveying, if possible, what news can be collected.

#### J. M. DEMPSTER.

21st November.—2 Europeans and some sepoys (taken near

Trichinopoly) arrived.

5th December.—2 Europeans, 1 Subr., 1 Jenn., and several sepoys carrying mud on ye works, they were taken near Trichinopoly in escorting provisions from ye coast to that place.

6th.—Hyder very ill (per Goolr.), ye sore on his back having broke out afresh, Tip recalled on that account to ye Grand Camp.

7th.—Arcot destroyed by Hyder who is expected shortly to

leave ve Carnatic.

11th.—Hyder dangerously ill. 49 Europeans lately arrived appear at drill this morning in Moorman's dress, many of them seem very young; Wm. Ross of Captn. Baird's Company at drill this evening in irons.

14th.—Per Goolr. From ye long faces at ye cutcherry Hyder

supposed dead.

15th.—Hyder dead (per Goolr., Cock Eye, &c.) 17th.—Confined to ye inner yard of ye prison. 18th.—Ye English tattoo beat on ye parade.

19th.—Permitted to go to ye outward yard on promise of not

coming near the door.

22nd.—Our guard relieved twice this morning, ye last posted by ye 2nd Myer and ye Commdt. of ye Battn. Personally with strict orders respecting us, we are not to stay any time in ye outer yard. Ye guard chiefly Carnatic people are of a Battn. of 700 men arrived yesterday from Tip's camp which they left 8 days before (in a great hurry) by Tip's orders with a new Killidar for this place, he himself returning with all expedition to ye Carnatic. That on this coast he obliged our army to retreat from before Palgot with great precipitation and left to Ponany, a fortified place near ye sea, which (having closely pursued them), he immediately stormed but was beat off with considerable loss; at this time he received ye account of Hyder's death, on which he immediately set out on his return for ye Carn. This Battn. is said to have been ordered here to relieve every post of trust in ye place; they are however, strict, very civil and communicative.

26th.—Hyder's death (the a general report) is still kept a

Circar secret. Some talk of peace.



X mas box to our 2 goolas, 2 dubs each subscribed. Those who are not in irons assembled and mustered.

27th,—A Bramin writer with attendants came this forenoon officially and was very particular in taking down our names, rank, ye corps we belonged to, and ye detachments or parties we were taken in

30th - Still a talk of peace.

31st.—At night Hyder's death published at ye Cutcherry.

1783—1st Jany.—× from Captn. Rumley acknowledging ye receipt of some fanams we sent him ye 24th ultimo per washer who rascal-like purloined 4 of them. He says that for 10 months past they had not tasted fowl and that even with double irons they wish to be with us; he complains of close confinement and bad treatment; that Coll. Baillie lost his life for want of medicine and attendance; that they frequently applied to ye Circar for either Mr. Whyte or ye F. Surgeon but to no purpose. Ye Colonel was buried in a box, one European and some sepoys attending him. The Naggar ceased beating to-day in consequence of Hyder's death The Nabab of Savonore said to have formed a party against Tip.

2nd.—Great divisions in his army. 3rd.—Charity distributed at ye Palace. Naggar beat again this morning. 6th.—× from Dempr. that Hyder died ye 27th November. Tip with ye grand army near Vellore, ours at Madras commanded by Genl. Coote; we have a small one at Tanjore and another at Trichinopoly; this last from a Sergt taken some months ago near Trichinopoly with 200 sepoys. No

troops from Bengal since ye detachment under Coll. Pearce.

83rd and 85th Regts, arrived from Europe; no army of ours at Calicut; our garrison there consists of ye 100th Regt, commanded by Coll. Humberton. The fort surrendered in 12 hours after ye landing of ye troops; no account of Genl. Goddard or ye Morattoes. Mr. Clarke sent to camp on this coast in room of Corpl. Anderson, 73rd Regt., killed. His health bad, he offers (in consequence of our application to him a few days ago) to send a letter for us to one of our settlements or garrisons.

8th.—A genl. × for ye above purpose sent to D——r. Married gentn. send private ones. Per washer a report of peace offered

by Tip lately decided in two battles. Sir Eyre Coote dead.

12th.—A battle between Poonamallee and ye Mount in which we lost taken 300 Europeans and 7 guns.

22nd—Nothing but peace talked of for some days past.

Rumley and Frazier's servants said to be taken from them.

25th.—Coll. Brathwait's arrival; 3 other Europeans and 2 black officers with him. He and Mr. Holmes (who is confined with him) allowed 1 fanam per day each, ye others only 6 cash each; all except ye Coll. in irons.

28th.—That ye Coll. has been at ye Cutcherry yesterday and this morning still a report of peace. That we have a strong force in ye Biddenore country and have taken some places there; that ye old Killidar of Naggram has refused admittance to ye new one sent by Tip.

29th.—15 of ye soldiers said to be pitched on for Musselmen by ye Killidar; their usual daily allowance of mutton and cash stopt for some time past, but promised to be restored to them; 2 European arty, men with their wives and children and a number of Carnpeople arrived prisoners.

30th.—A bloody battle lately in ye Carn. Tip beat.

4th February.—That ye Killidar of Naggram has revolted to us. 5th.—We send for ye Killidar to lay our grievances before him, but he does not deign to come; we therefore acquaint ye Myer with them for his information. Lieut. Samson attacked with a fever and ague.

8th. 4 Battns. and 15 guns cut off by Tip on their way to Wandewash; Naggram and Mangalore in our possession; Wandewash taken. Our army at Madras, hot weather, cold prevalent in prison.

14th.—Our irons strictly examined by ye Myer. 26th.—× from ye soldiers' prison that 6 of them have voluntarily taken service. Samson taken away in a dooly, ill of a fever and ague. Rumley and Frazier likewise taken away from their prison. 27th.—Ye above gentlemen put into Mysore fort; 4 European Musselmen taken in attempting their escape from Sumaurpett. Several more Europeans forced to become Musselmen.

1st March.—× from ye Coll. confined in a dark room with Holmes; kitchen and necessary in ye same, allowed 1 fanam per day each; Captn. Luck taken at Poodicota confined near him, starving on 6 cash per day. That Hyder a little before his death treated him well and intended through his means to treat of peace. Tip, hot for war, treats him ill. 70 fanams sent him and Luck. This day, 2nd and 3rd alarmed for fear of a search and our being sent to some other quarters. That we are to be destroyed on account of some cruelties committed by our people on this coast.

6th.--A party of 150 Europeans with 9 guns cut off near Naggram.

12th.—× to D——r. 14th.—Mahomed Ali's party encamped 6 miles N.-W. of this on its way to Naggram.

15th.—That we have taken 8 French ships lately.

16th.— × from ye Coll. for more fanam as he expects to be removed northward.

19th.—Moon totally eclipsed. Tip on his march to join his army at Naggram. 1500 Europeans and 8000 sepoys landed on this coast to join our army.

22nd.—Arcot, Chittore, Arnee and Chillumbrum blown up. Ye reliques of Hyder arrived to be interred here.

1st April.— × to ye Coll, with 50 fanam which he writes are necessary for a Corce, with Tanjore.

2nd.—Alampore taken by Tip.

6th.—12000 French under Bussy arrived. 1 European and 6 sepoys arrived prisoners from Alampore near Naggram.

7th.—Tip's son returned from a visit to him as he marched past to Naggram.

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26th.—Marched off, taken 3 Niars who gave information of ye enemy being posted in a large village to ye right; upon our arrival there the enemy was fled. An alarm happened about midnight

but a false one, but our troops were very much frightened.

27th.—Ye 3 Niars taken yesterday were hanged; ye Europeans put under centinels to their companies on which we refused doing duty and gave up our swords, for which Higgins was bound with his hands behind his back all day. Inwood and Clements beat with rattans, and in ye evening after encamping we were all tied in one rope and were ordered to be beat; however, we received our swords and were acquitted.

28th.—Arrived at a small mud fort in which were 300 of ye enemy; they fired a few jingalls (for they had no guns) at our mob, and early in ye morning they quitted ye fort and escaped; at day light our people entered it and did not take one man, halted here 20 days, parties went out daily and brought in prisoners, some of whom were hanged and others discharged paying a fine of their ears, nose or left hand.

4th April.—About 500 of ye enemy in sight, ye troops being ordered for battle and ye enemy in ye bushes in front fired at them with ye 3-prs., afterwards advanced and platoon'd with small arms. They also fired pretty warmly some time, but being close pushed by our mob, they made off to ye woods; how many killed of them is unknown, 9 heads were brought in to ye Jemidar. Thus ended ye affair with ye Niars for this time.

18th.—We marched out of their woody country and on ye 21st April arrived at a fort called Goondull. Gunnr. Subidar was convicted before ye Jemidar of having endeavoured to persuade ye Chaylas to leave their guns and go to ye Niars being one himself; he was tied to a post and is reduced to a private sepoy, but is excused from duty by his brother Niar, ye old Commdt., on ye 4th instant.

23rd. Arrived at ye fort we left ye 23rd March. Ye Jemidar ordered a sepoy to be beat in a barbarous manner by 4 men with large hamboos and then to be dragged round ye camp (by 6 men) on his belly, for cutting his wife with his sword in 2 or 3 places;

ye above orders were put in execution but ye man recovered.

24th - Arrived at a fort at Perripatam, halted there 5 days. 1st May -- Marched to a village called Cittipore near which were runn of a small fort which had been possessed by the Cooralner (another set of people formerly subdued now rebelling) who had deserted ye fort and fled. Ye country here as woody as ye Niar country, distant from Perripatam 20 miles. 2nd. - Arrived at a plain where ye Coorakee Raja joined our mob with 300 of his men armed with matchlocks and broad knives. Proceeded on till we came to a mmall fort built with large timber, in which were 250 Coorakees; mome of our troops were despatched with 3 Compy.'s of Chaylas to fire musquetry at it under cover of a high bank, which was not ye least service, ye other 2 Compys, of ye lads staid in ye rear us a body guard to ye Commander-in-Chief; ye enemy behaved resolute and obstinate; altho' they had no guns, they fired very hot from their jingalls and matchlocks; our 3-prs. scarce pierced ye timber. At night we draw off to encamp after firing away 8000 musquet balls in waste. During ye night ye enemy left ye fort and did not leave a man in their retreat, and at 6 o'clock in ye morning ye place was entered by 4 Compys, of Chaylas. Thus ended ye Coorakee affair for ye present. Within 16 miles of ye aforesaid fort are 20 Coorakees hanging on trees for their late insurrection. The Coorakee Raja and his men sent to Cittipore to settle there for their loyalty. The fort there has been built by them since.

Arrived at a stony fort called Marcary where several of ye Bramins had been defrauding ye troops who made their complaint to ve Jemidar; he ordered a lock of a firelock to be put on their ear and made them stand on one foot till they have agreed to make good the damage sustained by ye troops of ye town by their villany; in this place are 7 companies with firelocks lately come from Naggar, and a Portuguese Captain who commands 30 mustics artillerymen. Halted here 8 days. Ye monsoon setting m ve mob ordered to Canton at Perripatam (till orders from ve Nabab) where a Tabila was built for ye Chayla Battn, where we arrived the 25th May 1782. What will be our next exploit God knows, but neither ye Niars or Coorakees are settled yet; after steering all points of ve compass we were about 40 miles from you. This is the plentifullest place we have seen since we lett Seringapatam. Ye English actually in possession of Callieut. Ye name of ye Fryish only strikes a terror into this meb in general N.S. - Plas is yo most cowardly mob ever was known. from ve Commander in Chief to ve wild Polligar. On ve line of movin we are always like stragging sheep.

21st August. Intelligence came to ye Jemidar that a large tody of Cocaloes was assembling near Marcary, 3000 Polligars were detached from Perripatam cantonment and 300 sepoys with firelocks from Marcary.

24th.—They came up with ye enemy near a large river; they skirmished for near \(^2\) of an hour when ye Cocrakees charged and ye Polligars broke and ran, so were totally defeated, few escaped, about 50 of ye sepoys made their escapes and on ye 27 arrived safe at ye cantonment. 23rd Sept.—An Harcarra came in with intelligence that ye Coorakees had made an attempt on Cittipore with an intention to put to death ye Raja (ye loyalist) and his men.

26th.—The Jemidar marched with a mob of 4000 cowards (a greater one than himself does not exist) to Siclapore, 6 miles and encamped. 27th and 28th.—Continually skirmishing with ye enemy who often surprise our mob by springing out of ye jungle upon them; in ye evening of ye 28th arrived at Cittipore and relieved ye fort by leaving 250 sepoys in ye room of ye Raja and his men received in camp; our loss before we arrived here 30 men.

29th.—In ye evening ye enemy seen near our camp; the Jemidar ordered ye musick belonging to ye Matchlocks Infantry drums and Cavalry trumpets to be beat and sounded every gurry during ye

night in order to frighten ve enemy away.

2nd October.—Marched about 10 miles and found ye road stopt with large trees, &c., laid across it During ye time ye labourers were clearing it away ye enemy fired very hot from both sides of ye road and put our negroes to ye route. Taking ye opportunity of our confusion they charged in ye rear, and took all our Beyzar and baggage; several severe skirmishes happened in our way to Cittipore, in which we had 1 European and upwards of 100 blacks killed, 3 Europeans and near 60 blacks wounded; in great confusion we arrived at Cittipore that evening where we remained 5 days, during which time a treaty of peace was concluded between ye Jemidar and Coorakee prince.

8th.—Our mob escorted by 3600 Coorakees on each flank within 5 miles of Perripatam. It was undoubtedly great folly in a Coorakee prince to let us come off so easily as they must have cut us off entirely if we had moved from Cittipore unless in ye manner here mentioned. Ye fort of Cittipore was given over to them as

well as all other pretentions to their country.

10th.—2000 men joined at ye cantonment of Perripatam from Seringapatam and Hyder's camp. Perripatam is 150 miles from Callicut. I left ye cantonment ye 19th October 1782.

# (Signed) BENTAL WOODLEY.

 $\ensuremath{\textit{NB}}$  —Ye aforesaid treaty will be broke of by Hyder as soon as ever he finds it convenient.

Extract of a letter from ye same, dated Perripatam cantonment, 25th July 1782, To ye same,—I assure you our situation is very bad, much worse than yours: Higgins and ye old Commdt.



draw 3 paga per month, but our pay and ye Subidars is only one fanam per day, which change only for 8 pice and 3 cash, ye Wardiwalla Serg \(^3\) fanam per day. Wardiwalla Corp. \(^1\) fanam, 1 pice, 1 cash per day, Havildars \(^1\) fanam and sepoys \(^1\) fanam per day, and ye provisions cooked for ye Europeans and boys all on an equality. Ye Commdt. and Subidars like officers but we are like slaves. Rice boiled twice a day in a dirty prisoner's manner with a little curry made of doll only, 5 seers of ghee only for 500 men per day; we had not any meat but twice these 2 months past on which account it costs us (misers excepted) all our 8 dubs and 3 cash for victuals; we are treated ill by ye old Commdt. who has now full command of ye Battn. we have now only at exercise. The Jemidar Commander-in-Chief answers all our complaints with jow jew.

Your news surprise us greatly; it is not believed by Higgins or ye N. Brittons, however we hear very different news here, but cannot assert ye authority of it, viz., ye French joined ye English, Lally deserted to them also, Hyder in his own country, the English army at Trinomally. McKennon was wounded atshot thro' ye arm with a musquet ball by one of our own mob. The Jemidar made him a present of a red turban and a pair of gold beads value 10 paga; all ye boys that were wounded received a present of silver bangles to wear round their arms value 26 rupees. In ye night of ye 25th June, Smithy, Green, Clements, Anderson, Wyley, McKenzie and your humble servant endeavoured to venture towards Callicut with a determination to extricate ourselves out of Hyder's service; after walking by ye light of ye moon about 6 coss thro' ye thickest woods, were surprised by wild elephants and tigers, by accident lost our bread which made us conclude to turn back again. Accordingly did so and it seems Higgins being afraid lest we should get into trouble, reported as gone to Seringapatam to complain of ye Jemidar's usage. Ye horse being sent out after us met us about 5 miles from ye cantonment and brought us into ye Jemidar; we said, by way of defence, that we had been out shooting, having a carbine and 2 pistols with us, but having 2 shifts of cloaths on us, we were stript and all tied in one rope. 100 of ye stoutest of our boys received each a twig of tamarind tree and served us out a lash each. I was cut from ye nape of ye neck right down ye back and have recovered ye flogging too, thank God. We have no centries over us for about a fortnight before we began this adventure, now we cannot go out of ye Tabelah without one. Pray what do you think of this adventure ?—(Signed) BENTAL WOODLEY.

<sup>×</sup> from D——r accompanying ye foregoing ×. Gentlen,—your ×s received. Messrs Speediman and Rutledge having answered your several questions so fully concerning ye present war subsisting between ye Compy. and Hyder that anything that I could further add would be nothing more than mere repetition; if I don't mistake

they have omitted making mention of anything appertaining to a peace; such a thing is not talked of and from what I have collected from a Sergt. who arrived here a few days ago, and has shared ye fate common to ye rest of us here, it seems that things don't wear any tolerable complexion owing to ye arrival of ye French; inclosed you have an account from ye unfortunate midshipman of ye 3 several engagements that happened between our fleet and that of ye French, together with a list of both. I shall never omit any opportunity of conveying, if possible, what news can be collected.

#### J. M. DEMPSTER.

21st November.—2 Europeans and some sepoys (taken near

Trichinopoly) arrived.

5th December.—2 Europeans, 1 Subr., 1 Jemr., and several sepoys carrying mud on ye works, they were taken near Trichinopoly in escorting provisions from ye coast to that place.

6th.—Hyder very ill (per Goolr.), ye sore on his back having broke out afresh, Tip recalled on that account to ye Grand Camp.

7th.—Arcot destroyed by Hyder who is expected shortly to

leave ye Carnatic.

11th.—Hyder dangerously ill. 49 Europeans lately arrived appear at drill this morning in Moorman's dress, many of them seem very young; Wm. Ross of Captn. Baird's Company at drill this evening in irons.

14th.—Per Goolr. From ye long faces at ye cutcherry Hyder

supposed dead.

15th.—Hyder dead (per Goolr., Cock Eye, &c.) 17th.—Confined to ye inner yard of ye prison. 18th.—Ye English tattoo beat on ye parade.

19th.—Permitted to go to ye outward yard on promise of not

coming near the door.

22nd.—Our guard relieved twice this morning, ye last posted by ye 2nd Myer and ye Commdt. of ye Battn. Personally with strict orders respecting us, we are not to stay any time in ye outer yard. Ye guard chiefly Carnatic people are of a Battn. of 700 men arrived yesterday from Tip's camp which they left 8 days before (in a great hurry) by Tip's orders with a new Killidar for this place, he himself returning with all expedition to ye Carnatic. That on this coast he obliged our army to retreat from before Palgot with great precipitation and left to Ponany, a fortified place near ye sea, which (having closely pursued them), he immediately stormed but was beat off with considerable loss; at this time he received ye account of Hyder's death, on which he immediately set out on his return for ye Carn. This Battn. is said to have been ordered here to relieve every post of trust in ye place; they are however, strict, very civil and communicative.

26th.—Hyder's death (tho' a general report) is still kept a

Circar secret. Some talk of peace.

X mas box to our 2 goolas, 2 dubs each subscribed. Those who are not in irons assembled and mustered.

27th.—A Bramin writer with attendants came this forenoon officially and was very particular in taking down our names, rank, ye corps we belonged to, and ye detachments or parties we were taken in

30th.—Still a talk of peace.

31st.—At night Hyder's death published at ye Cutcherry.

1783—1st Jany.—× from Captn. Rumley acknowledging ye receipt of some fanams we sent him ye 24th ultimo per washer who rascal-like purloined 4 of them. He says that for 10 months past they had not tasted fowl and that even with double irons they wish to be with us; he complains of close confinement and bad treatment; that Coll. Baillie lost his life for want of medicine and attendance; that they frequently applied to ye Circar for either Mr. Whyte or ye F. Surgeon but to no purpose. Ye Colonel was buried in a box, one European and some sepoys attending him. The Naggar ceased beating to-day in consequence of Hyder's death The Nabab of Savonore said to have formed a party against Tip.

2nd.—Great divisions in his army. 3rd.—Charity distributed at ye Palace. Naggar beat again this morning. 6th.—× from Dempr. that Hyder died ye 27th November. Tip with ye grand army near Vellore, ours at Madras commanded by Genl. Coote; we have a small one at Tanjore and another at Trichinopoly; this last from a Sergt. taken some months ago near Trichinopoly with 200 sepoys. No troops from Bengal since ye detachment under Coll. Pearce.

83rd and 85th Regts. arrived from Europe; no army of ours at Calicut; our garrison there consists of ye 100th Regt. commanded by Coll. Humberton. The fort surrendered in 12 hours after ye landing of ye troops; no account of Genl. Goddard or ye Morattoes. Mr. Clarke sent to camp on this coast in room of Corpl. Anderson, 73rd Regt., killed. His health bad, he offers (in consequence of our application to him a few days ago) to send a letter for us to one of our settlements or garrisons.

8th.—A genl. x for ye above purpose sent to D——r. Married gentn, send private ones. Per washer a report of peace offered by Tip lately decided in two battles. Sir Eyre Coote dead.

12th.—A battle between Poonamallee and ye Mount in which we lost taken 300 Europeans and 7 guns.

22nd.—Nothing but peace talked of for some days past. Rumley and Frazier's servants said to be taken from them.

25th.—Coll. Brathwait's arrival; 3 other Europeans and 2 black officers with him. He and Mr. Holmes (who is confined with him) allowed 1 fanam per day each, ye others only 6 cash each; all except ye Coll. in irons.

28th.—That ye Coll. has been at ye Cutcherry yesterday and this morning still a report of peace. That we have a strong force in ye Biddenore country and have taken some places there; that ye old Killidar of Naggram has refused admittance to ye new one sent by Tip.

29th.—15 of ye soldiers said to be pitched on for Musselmen by ye Killidar; their usual daily allowance of mutton and cash stopt for some time past, but promised to be restored to them; 2 European arty, men with their wives and children and a number of Carnpeople arrived prisoners.

30th.—A bloody battle lately in ye Carn. Tip beat.

4th February.—That ye Killidar of Naggram has revolted to us. 5th.—We send for ye Killidar to lay our grievances before him, but he does not deign to come; we therefore acquaint ye Myer with them for his information. Lieut. Samson attacked with a fever and ague.

8th. 4 Battns. and 15 guns cut off by Tip on their way to Wandewash; Naggram and Mangalore in our possession; Wandewash taken. Our army at Madras, hot weather, cold prevalent in prison.

14th.—Our irons strictly examined by ye Myer. 26th.—× from ye soldiers' prison that 6 of them have voluntarily taken service. Samson taken away in a dooly, ill of a fever and ague. Rumley and Frazier likewise taken away from their prison. 27th.—Ye above gentlemen put into Mysore fort; 4 European Musselmen taken in attempting their escape from Sumaurpett. Several more Europeans forced to become Musselmen.

1st March.—x from ye Coll. confined in a dark room with Holmes; kitchen and necessary in ye same, allowed 1 fanam per day each; Captn. Luck taken at Poodicota confined near him, starving on 6 cash per day. That Hyder a little before his death treated him well and intended through his means to treat of peace. Tip, hot for war, treats him ill. 70 fanams sent him and Luck. This day, 2nd and 3rd alarmed for fear of a search and our being sent to some other quarters. That we are to be destroyed on account of some cruelties committed by our people on this coast.

6th.—A party of 150 Europeans with 9 guns cut off near Naggram.

12th.—× to D—-r. 14th.—Mahomed Ali's party encamped 6 miles N.-W. of this on its way to Naggram.

15th.—That we have taken 8 French ships lately.

16th.— × from ye Coll. for more fanam as he expects to be removed northward.

19th.—Moon totally eclipsed. Tip on his march to join his army at Naggram. 1500 Europeans and 8000 sepoys landed on this coast to join our army.

22nd.—Arcot, Chittore, Arnee and Chillumbrum blown up. Ye

reliques of Hyder arrived to be interred here.

1st April.— × to ye Coll, with 50 fanam which he writes are necessary for a Corce, with Tanjore.

2nd.—Alampore taken by Tip.

6th.—12000 French under Bussy arrived. 1 European and 6 sepoys arrived prisoners from Alampore near Naggram.

7th.—Tip's son returned from a visit to him as he marched past to Naggram.

11th.—A salute fired and sugar distributed said to be in consequence of retaking Naggar, also ye Mysore Standard presented

before ye Raja.

15th.—4000 Portuguese landed at Tillicherry to join us 21st.—A Battn. of Chaylas (500) gone to camp. 27th.—Coorore and Tonore taken by us. We have lately been successful in ye Carn. against ye army left by Tip in conjunction with ye French. Much rain in this month.

1st May.—7 guns fired for ye fall of Naggar.

2nd.—A salute at noon, various reasons assigned for it, ye most general as yesterday; by some that it is a ceremony for ye old Tyrant; others that ye young one has lately had a narrow escape with a slight wound in ye foot by a rocket

17th.—Naggar certainly taken.

25th.—Genl. Mathis arrived in a palanqueen with his 2 European servants and baggage. 26th.—A party of Portuguese and Europeans with their families arrived prisoners.

30th.—× from ye Coll; subscription of 1 cash each per day

agreed to for Leech.

26th July. - Fatty Cawn's triangle set up interrorem.

5th August.—Aunchilwalla and other great men taken up on suspicion of treason. 13th.—In ye morning one of them drawn at elephant's feet, at noon 2 others led out with ropes about their necks to be hanged.

19th.—Ye sun vertical.

20th.—3 o'clock in ye morning peace per Abd. Cawdor and ye Commandant.

29th.—Confirmed per P.M. Ye heavy cannon, &c., and many troops arrived from ye army, Tip with ye remainder to be here in 20 days.

1st September.—Morning I was examined, noon ye Myer and a Bramin take a list of our names, rank, and monthly pay; ye Bramin requires of us if General Mathis' servants are of Europe or this country.

8th.—General Mathis died in *irons* yesterday, though in perfect health ye day before; his European servants were taken from him ye 16th last month when he was put in irons; ye Wm. says that ye Circar people, on Genl. M.'s death, tore all his cloaths. Peace doubtful per P.M. Every appearance of ye camp breaking up. Guns, baggage, &c., arriving daily. 11th and 12th.—A body of regular cavalry carry into fort; peace ye general report.

14th.—P. M. again confirms it.

27th.—Raja's festival commences, likewise ye firing of an evening and morning gun, ye former at 9 o'clock, ye latter at day-break.

2nd October.—Ye treaty likely to break off.

5th.--Ye festival concluded with a salute of 5 guns, during it some executions in consequence of ye late conspiracy.

9th.—Revived again by a report of peace per P.M.

21st.—Ye Commdt. taken to ye Cutcherry and offered service by ye Killidar.

28th.—Fatty relieved; various reports of peace from ye new guard. Coll. Lang at ye Pollgat; 17 of ye Naggram officers at Caval-

droog in close confinement, &c., very ill treated.

30th.—Ye Europeans taken from ye Chayla Battn. and drillers from ye Cavalry put in their rooms. Hyder's tomb visited, a great ceremony. 2nd November.—Fanam reduced from 11 to 9½ dubs. 3rd.—Soldier's allowance increased to ¼ fan. per day. 8th.—Evening, Lieut. Butler died of a flux. Tip to be here in 8 days. Mangalore given up to him; officers in great state at Bangalore on their way hither. For us ye peace being concluded.

15th.—Coll. B. called to ye Cutcherry thro' mistake; ambas-

saders daily expected; Tip likewise in a few days.

18th.-5 Europeans in irons from Mangalore.

20th.—M——y's mother from Trichinopoly with × and 13

paga for C. Jud.

22nd.— × despatched for ye Carn. per her companions. 24th.— Sepoys of ye guard from Chittledroog says that all Genl. M.'s officers who were prisoners there (originally 17) are dead. That they were debar'd wholesome water, in every respect very ill treated and at last forced by ye Killidar to swallow poison; no account of ambassadors.

29th.—Irons strictly examined.

4th December.—European and sepoy prisoners from Mangalore.

19th.—Chaylas sent off to Mysore.

21st.—Received 2 suits of jackets and drawers and a piece of cloth 61 cubits each, all very coarse, value about 5 fanams: hot report of ambassadors and peace.

28th.—Ambassadors past from Sattrum towards Naggar.

31st.—Much alarmed by Stringer who in a mad fit sent to acquaint ye Killidar that he had something material to disclose to him.

1784—1st Jany.—Ye Commdt, informed from ye Killidar that it is Tip's positive order he shall take service and threatened in case of refusal.

8th.--(By us ye 16th) a commet seen W.-S.-W., ye tail eastward, it continued visible (declining northwardly) till ye succeeding new moon appeared.

13th.—Guard doubled.

7th February.—Mustered by ye Myer and a writer with pen and ink; and ambassadors proceeded from Chundrepatam about ye end of last month were in daily expectation of ye peace being concluded, every report corresponding to that effect; for some days past Tip reported ill of his father's disorder.

10th February.—List of ve whole prison taken by a Bramin with

ve Myer.

11th.— × from Mr. Lilley, taken as he came to Mangalore to buy a ship, a Doctor, 14 soldiers and 30 sepoys cast ashore near Mangalore in prison with him here.

17th.—Ye inhabitants ye Mangalore country removing by Tip to this. Ye Coimbatore country delivered up.

19th.—Tip's brother-in-law from camp; 2 Chayla boys we have frequently observed making signals to us; having met our servants at ye well, send us word that they are 2 of 8 boys who belong to ye King's troops taken in ye Naggram country, one having died on ye road and another here; there now remain only 6 who with 2 others and 2 Portugee Bombay drumrs, are obliged to attend ye Diroga daily to learn Persian; they were drumr, and fife of ye 100th and 101st Regts. They entreat in ye most pressing terms that we may nor forget to apply for them at our enlargement which (ye peace being already concluded) is near at hand. Tip with our ambassadors expected here in a few days. 21st.— × from Lilley, a truce since ye 2nd August.

28th.—Peace broke off. A. W. died 13 days ago.

7th March.— × from ye soldiers about 6 months ago 27 men of ye Kings (taken in ye Nagram country) were put in with them; ye whole now amount to 62.

8th.— × from Lilley. That Mangalore cannot be relieved, 2 faces of it laid in ruins; about 3 mile from ye sea, a strong work commands ye mouth of its river.

Ye sol. and seps. brought here with him were cast away in coming from Tellicherry to its relief. Mangalore from some time past reported given up peace (sometimes made and sometimes making), broke off to-day and Cundapore attacked. Keyrim with part of ye army within 5 days' march of this. The Commdt S. E. taken away at 8 o'clock at night. 9th.—That S. E. with 9 others, 13 officers and Bramins who were assembled from different prisons at ye same time were put into a very close prison in irons.

10th.—Fighting in all quarters, yet our ambassadors in camp. 11th.—Grand procession Tip (Ab. Aly), his uncle and ye Killidar to Hyder's tomb.

13th.—Murders frequent for some night past.

15th.—x extract from Vencetrm. with ye sol. 27th.—At last ye Killidar sent for me and ordered me to inform all ye soldiers that ye Nabob and ye Compy. had made peace and that they would all soon be sent to Madras; ye Europeans at that time were all handcuff'd 2 and 2 together; soon after ye Killidar came to ye prison and ordered ye handcuffs to be taken off. We were put in that time about 12 o'clock at night, remained so 40 days. About 4 months ago in ye dead of night we received ye 2nd alarm of this kind but were handcuff'd singly both hands, since which ye Bramin has been here 4 different times to enquire for mechanics, taken all our names, pay, batta and rank in ye Compy.'s service. Another fresh alarm that there has been a number of black prisoners taken and massacred; it is transacted every night. We heard yesterday that there was an ambassador arrived from camp here and was going with all speed to Madras.

Here the Diary ends.

June 1784 all the prisoners who had not succumbed to privations were released, among them Sir David Baird and Col. Massey. Hyder had died in December 1782, but peace was not concluded and prisoners released until June 1784. Colonel Massy fought at the taking of Seringapatam in 1799, when hostilities broke out afresh. One can fancy what delight he and others, who had been prisoners there, must have felt when Seringapatam was finally taken by the British. Before Col. Massy's death Her late Majesty Queen Victoria expressed a wish to see him and offered to pay him a visit, but it was feared that at his great age the excitement would be too much for him, and on being informed of this Her Majesty immediately gave up the idea. Ye iron constitution of this fine old soldier enabled him to bear all ye hardships and privations of his captivity. He was one of ye many officers who served the old company faithfully and well. Subjoined is a list, taken from his Diary, of ye names and regiments of all officers and men who were prisoners with him:-

#### 10TH AUGUST 1781.

Col. Baillie's Detachment at Perembancum, 9th September 1780.

Joined from ye Main
Army under ye comd. of Col.
Fletcher.

1 Gr. Co. 73rd Regt.
1 Lt. Inf. do. do.
1. Gr. Co. 2nd Battn. 1st Regt.
1. do. do. 2nd do.
Most part of ye Co. of Marksm.
10 Co. Sepoy Grenadiers.

1 and ½ Co. Artillery with 10 Field Ps.
2 Co. European Infantry.
1st Carnatic Battn. Sepoys.
11th do. do.
6 Co. of ye 7th Car. Bn. Sepoys.
2nd Circar Batt. Sepoys.

Officers, &c., &c., in prison at Bangalore:-

Capt.	Jones, Artily.	Ensign	Lang.
,,	Gowdie.	,,	Whyte.
,,	Smith, Artily.	,,	Nash.
Lieut.	McNiel.	1,	Dring
,,	Mewat.	,,	Mackay.
"	Reed.	,,	Frank.
"	Halliburton.		Hodges.
,,	Campbell.	,,	Cuthbert.
"	J. Forbes.	,,	Gorec.
Ensign	Corner.	Vol.	Latham.
,,	W. Forbes.	Surg.	Rain.
,,	J. Innes.	,,	Oglivie.

Officers &c., &c., killed 10th September 1780 or died of their wounds, 10th August 1781:—

Col.	Fletcher.	Ensign	Marshal.
Capt.	Powell.	,,	Rogers.
,,	Nixon.	,,	Bowel!.
"	Phillips.	,,	Birjeer.
,,	Farrian, C.	,,	Tomlinson.
Lieut.	Gun Jand Boot	,,	Galway.
,,	Gun McKenzie. 73rd Regt.	,,	Monereif.
,,	Cotton, A.	,,	G. B. Clarke.
,,	Wade.	,,	Wood.
,,	Knox.	٠,	Shadden.
Ensign	Macklin.	,,	Geo. Clarke.
,,	Lombard.	Lieut.	Cox, A.
,,	Dick.		L. F. W. Mirton.
,,	Curtis.	Cadet	A. Baillie.
,,	Himming.	,,	Forbes.
"	Dawes.	Surgs.	Wilson.
,,	Wyms.	"	Campbell, A.
"	Maighan.		-
37 71	A A 141 41 1 1i1 at		

N.B.-A. Arnee and G. Colora died at -

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Officers in prison at Seringapatam (10th August 1781):—
         Bird, 73rd Regt.
                                   Ensign
                                           Pielat.
 Capt.
                            29th
                                            Moore.
         Lucas
                 arrived
   ,,
                    1781,
                            died
                                            Coke from Pandinalore
           Jany.
           5th July 1782.
                                              20th May 1781.
         Wragg.
                                            M. Conochee, died 9th
         Grant.
                                              July 1782.
   ,,
         Montieth.
                                            Stringer.
Lieut.
         Lindsay, 73rd Regt.
                                            Wilson.
         Butler, died 8th Nov.
                                            McAnley fm. Jinges,
           1783.
                                              29th Jany. 1781.
                                            McAlister.
         Massy.
   ,,
         Chase.
         Mackav.
                                    Cadet. Jno. Baillie.
   ,,
         Bowen.
                                            Arch. Hope, dated 7th
         Turing.
                                              July 1782.
```

Mr. Shardow resident of Pondichy.

Ensigns Gordon and Bronton confined with ye soldiers, also a Mr. McNeil, mate of a ship.

Col. Baillie, Capt. Rumley and Lt. Frazier confined in a choultry

on ye parade within view of our prison.

Non-Commissn. and Privates taken prisoners on ye 10th Sept. 1780.

Grenadrs., 73rd Regt., 1st Battn.

At Seringapatam— Christie.

McDougall. Williamson.

Leighton. Anderson. Piper Gun. Pte. Anderson, Sr. Anderson, Jr. Beaton. Dangerfield. Frazer. Turnbrith. Forrester. Frazer. Johnson. Hickwith. McDonald. Stewart McDonald. McDonald. McKenzie. McKenzie, Jr. Marterton. McLeain. McLeod. Marr. Nesbit. Noble. Ore. Ross. Stewart. McGlashen. Monroe. Ross. McPherson.

At Bangalore—
Allison.
Ross.
Cameron.
Beaverlie.
Dick.
Gun.
Mr. Cuthbert, Vol.

Left at Arnee—
Manson.
Sutherland.

Killed and missing ye 10th Sept.

1780:— Corpl. Frezier. W. Richerson. Hayton. Henderson. Harris.

Dr. Hutchinson.
Died at Arnee—
McLeod.
Duncan.
Summerside.
McKenzie, Jr.
Taylor.
Thompson.

Died at Bangalore— Sergt. Balmain. Jno. Kilmain.

Died at Seringapatam-

Dich. McDonald.

# Light Infantry, 73rd Regt.

Corpl. Stewart.
" McGregor.
Dr. McKenzie.
" McIntosh.
Wetherspoon.
McKinnon.
Mallock.
Thompson.
Wilson.
McDonald.
McMillan.
Atkin.
Ross.
Moodie.

Stewart.

Rd Monroe.
Macbeth.
Cameron.
Davis.
Douglas.
Mills.
Welch.
Wylie.
Cowan.
Frazer.
At Bangalore—
Sergt. Walker.
Mr. Hodges, Vol.

King.

Jno. McLinnon.

M. McKenzie.

A. McKenzie.

B. McKenzie.

Corpl. Wyley.

Left at Arnee—
Sergt. Wilson.

Jas. Taylor.

Ross.

Died at Seringar

Ross. Died at Seringapatam — Sinclare Sergt. McPherson.

### Artillery Corps:—

Sergt. Done. Riches. Duck. Daily. Burton. Langley. McKenzie. Waugh. Price. Everett. Wilson. Farule. Corp. English. Allen. **Pinchers** Bishop. Smith. Roberts. Hutchinson. Jas. Mann. Withrington. Maxom. Mann. Inwood.

## Grenrs, 2nd Battn., 1st Regt.

Sergt. Graham. Ried Smith. Wright. Porter. ,, Kelly. Davis. Martin. Neighbour. Hays. Mason. Corpl. McDonald. Malpose. Jones. Morton. Smith. Whyte. Mathew. Charlton. Davidson. Ray. Lawrence. Howell. Pemberton. Beaton. Chapman. Ewell. Wilson. Dav. Jones. Harrison. At Bangalore -Harris. Hervey. Dobbins. Jones. Green. Climins. Hill. Benson. Able. Tho. Harrison. McDonald. Keys.

### Grenrs., 2nd Battn., 2nd Regt.

Sergt. Sidgwich. Ramsay. Waugh. Wilkinson Walger.

Brown.

Dr. Mathews.

Corpl. Adamson. Heming. Drumr. Johnson. Missing. Dubrass. Disilnise. Buck. Balwin. Brewer. Buck. Baillie. Buckingrum. Jas. Clarke. Rob. Clarke. Cunningham. Cooper. Duggin. Emmery. Facett. Hartinell. Hay. Jervis. Jenkins. Lamb. Martin. Potts. Roberts. Pickerds. Richmond. Rowles.

Stasey. Styles. Sadler. Short. Sweeney. Summerland. Sheppard. Thompson. Thornton. Turner. Wade, Senr. Walker. Wills, Jnr. At Bangalore -Sergt. Clarke. Corpl. Sedutone. Anthoney. Jackson. Murry. Marshall. Oley. Softly. Smith. Wessel.

Wade, Jnr.

Left at Arnee—

Craney.

See.

## 7th Co. of Infy., 1st Battn., 2nd Regt.

Hill. Sergt. Brazier. McCormack. Hugman. Hand. Corpl. Jacobs. Bush. Moody. Hawkins. Thorp. White. Leighton. Yorke. Loneman. Davis. Chapman. Bailes. Pierce. Hargrove. Morton. Thomas. Defoure. Shell. Green.

1st Co. of Infy., 1st Battn., 2nd Regt.

Cherry. Harris.
Thomas. Canjers.
Fox. Walker.
Piles. Sutton.

Woodley.

Harrington.

Durois.

Allen.

Chambers.

Bermiek.

Dunhill.

McIntosh.

Wheel.

Foley.

Shelders.

Barns.

Barns.

Mathews.

Sergeants of Sepoys, 1st Carnatic Batt.

Tho. McEvay
W. Lawrence.
At Bangalore—
A. Sutherland.
Lemes.

Kingbury.
At Arnee—
Cadiny.
Bruce.

7th Curn. Battn.

At Bangalore— Harlow,

Handsdown. Harlow. Broom.

11th Carn. Battn. At Bangalore—

Atchinson. Brockie.
Redeliffe.

2nd Circar Battn. Do.

Higgins. At Bangalore—Hallinsworth. Middleton. Caney. Ed. Pomer.

Shipman, D.

Sepoy Grenadrs., 17th Carn. Battn.

Thos. Duttan Bange.

21st Carn. Do.

Wm. Dolton.

Richd. Brodbridge and Alex. Munroe.

Qr.-Mr. Sergts. taken in front of Genl. Monroe's line on ye march to Conjeveram.

No acct. of ye Sergts. of ye 14th and 16th Battns.

7 invalids from Chinglepat.

Col. Braithwait's Detacht. at Vellitola, 17th Feb. 1782, attacked by Tip:—

		CAVALRY	•		ARTIL	LERY.	tr <sub>J</sub>
		Attached to ye					nfantry
	nted.	:	ıtry.		ms.		eans I
Mounted	Dismounted	\rtillery	Infantr		irope	Blacks.	Europeans Dutchin
 _ <del>X</del>	Ď	Ar	<u> </u>		Eur	- BI	표
142	142	25	116	•••	23	113	64
	l						

# Sepoy Corps.

10th Bn. Sepoy. Comdd. by Lt. Gillon. 8th Compy. of 13th do. do. by Lt. Lind.

5th Compy. Sibandy Gunrs. comdd. by Lt. Eastland.

### Field Train:-

7-6 Pounders, 2-3 prs. galloped with ye cavalry, 1 5½-inch Howitz.

## Conaly. Officers.

In prison—
Col. Brathwait
Ensn. Holmes.
Capt. Judson, Arty.
Lt. Eastland.
Lind.
Gillon.
Samson Car.
Caunneren.
Ensn. Graham.
Thawles.
Kennot.

Scringapatam—
Gahagen.
Lov.
MČawley.
Haywood.
Fenwick.
Surgn. Whyte.
Capt. Bowles.
Lt. LaTulip.
Lt. T. W. Clanman.
Ensn. Stewart killed on ye field.

# THE NEW ORGANISATION OF THE REGULAR ARMY AND THE TERRITORIAL FORCES AT HOME.

Lecture given at Simla on July 15th, by Major G. F. MacMunn, D.S.O., p.s.c., R.F.A., D.A.Q.M.G.

MAJOR-GENERAL R. 1. SCALLON, C.B., C.I.E., D.S.O., ADJUTANT GENERAL IN INDIA, IN THE CHAIR.

#### Precis of Lecture.

### I.—THE MILITARY PROBLEM IN THE UNITED KINGDOM—

- The Establishment of the General Staff, the Defence Committee and its Secretariat.
- 2. The systematic survey of assets and liabilities.
- 3. The existing state of affairs.
- 4. The impossibilities of mobilisation.
- 5. The indifference of the public.
- 6. The thousand experts.
- 7. The conclusions arrived at by the Defence Committee.
- 8. The possible solutions.
- 9. The materials available.

#### II.—THE SOLUTION ACCEPTED—

- 1. The Regular Army for war abroad.
- 2. The Militia to be merged in the Army.
- 3. The Auxiliary Forces to be made into a complete army for Home Defence.

#### III.—THE TERRITORIAL FORCE.—

- 1. The Swiss parallel.
- 2. The status of the Territorial Force.
- 3. Its organisation.
- 4. Its artillery.
- 5. Its limitations.

## IV .- SUMMARY.

#### I.—THE MILITARY PROBLEM IN THE UNITED KINGDOM.

The principles underlying the new organisation of the Regular Army and the Territorial Force have been obscured and distorted and misrepresented by the extraordinary press campaign, which has been conducted in England, especially in London. Neither the press nor the public will admit that anything good can come out of the War Office. For many years even the mass of the Army were possessed with the same idea, ignoring the fact that the staff at the War Office were a very hardworking body of men trying to make very many bricks with very little straw, and to cope with the vagaries of party financial moves actuated by politicians who knew little of

and cared less for the vital defences of the country. To get some inkling of what such troubles have been in the past, the military life of the Duke of Cambridge by Colonel Willoughby Verner, should be read. The facts therein recorded are incredible and should pardon the vagaries of the War Office and the Horse Guards fifty times over.

In this lecture I do not propose to argue whether or not the new organisation is wise or sufficient. As a soldier I accept what the authorities decide, but I hope to put before you what has been aimed at and why.

# The Establishment of the General Staff and the Defence Committee

The Memoranda that the Secretary of State for War has presented to Parliament explaining the principles for the new organisation have been hopelessly mangled in the press, and the fact that the general public, soldier and civilian has only been able to read such garbled extracts has gravely inditated against their proper understanding. No scheme of reorganisation or organisation is worth having, unless it has been considered in its broad lines, and those broad lines assimilated to general policy. If the broad lines are right, the superstructure and its details are matters to be wettled separately. When therefore the critics of the scheme say that it is good "on paper," they are giving the highest praise. If it is good on paper, it means that the general lines and principles are correct. I hope to show to-night, to those who have not been able to study for themselves, the whole text and previous conclusions, that the new organisation is, for the first time in our history based on a careful prolonged and systematic study of our nectary haval and political assets and halolities. To do this I must ask you to turn back to the early spring of 1904 when the Esher Coran See, us as ly spoken of as the Transvirge published their report. The Committhe monded Sir John Fisher, the present First S & Lod and Sir George Sydenham Carke, who as you know is now the Governor of Bombay. That Committee made in very comprehensive report and made many away pang recommer late me of which the may rity were at one are pied with a proriginess which had some resemblance to nemperated. The recent of his methat wheeled the queston we are considering were as to as The Countries punted out that practice with which fire with a the War On a were a normal and son you are down the problem of the admir street mand mantenance from we two be Arms en a vectors become direct mornious of the dw half-papers had war wash of The ability strategy in the transfer for the account of the contraction of the contract of the con and magnessing, and winding a sted that them is given to be worth. with them had not been to story the preparate in thrand the cona brist, in firmer. The result of the similate questions existent in every montary reform or act in that had ever been taken. It was

the result of patchwork consideration, usually carried out in deference to agitation, and not the result of the reasoned recommendations of men who spent years in getting au fait with the problems and precedents of war that immediately effected our nation. They pointed out that though we had a very efficient mobilisation branch, it was only concerned in arranging to mobilise such small portion of our forces as Parliament on no grounds, save of economy, was prepared to permit. Prior to the South African War, a half-starved Intelligence Branch cried aloud in the wilderness to little effect. After that war the Intelligence Branch was very much enlarged, but still no big division at Headquarters was formed to concern itself solely with such matters as preparation for war. It was recommended therefore that a great General Staff should be formed at Headquarters charged with the study of and preparation for war, and that it should be part of a General Staff charged with the training of troops for war. This is the greatest change that has ever yet been made in England, and one that Royal Commission after Commission has at one time or The recommendation was put into effect other recommended. forthwith, with the major portion of the other recommendations of the Triumvirate. In addition to the inception of a General Staff, there was one other recommendation equally important from the point of view of the study and preparation for war.

A few years earlier Mr. Balfour, when Premier, realised that though the responsibility for naval and military policy must rest with the Cabinet and Premier alone, still it was a matter of which Premiers as a class had little intimate knowledge. He therefore instituted a Committee of Imperial Defence composed of the civil and military heads of the Army and Navy, and such other persons as the Premier might nominate, to advise him. Prior to this there had been a Military Defence Committee within the War Office, and a Colonial Defence Committee for considering the joint affairs of the Empire, but never on the comprehensive scale of the Imperial Defence Committee. The Triumvirate however pointed out that this big Defence Committee was all very well in its way, but that it had no means either of writing up the history of its own deliberations, nor of having complete and carefully prepared data put before it when it met, so as to secure that it had a correct and all sided appreciation before it of the question under review. They therefore recommended that a permanent Secretariat should be formed, under some senior soldier or sailor, with a small naval and military staff to co-ordinate the view of the General Staffs of the Army and Navy and to be certain that all possible information and history of any subject that the Committee could have to consider should be to hand. This recommendation was also accepted and Sir George Sydenham Clarke was appointed the first Secretary. He has now been succeeded by Captain Otley, R.N., who went to the Hague Conference as a naval representative.

We now come to the bearing of the foregoing on the subject of my lecture. The Defence Committee and especially its

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Scere tarrat and the General Staff of the Army with the Intelligence Division of the Navy (which represents their General Staff set to work to study in a comprehensive and exhaustive manner the whole question of the navid and military needs of the nation and the operations in which there was any reasonable possibility of our being engaged and also the trend of politics and the action that they might entail in the future. A systematic survey of this sort had never been made except by occasional unotheral unaided efforts, or by Royal Commissions which had never the opportunity of studying all the data probably because there was no one in England who could give them such or could collect the main points of the problem for them. For two years the General Staffs and the Detinee Committee studied this subject in all its bearings.

## Conclusions acrived at by the Definer Committee.

The present organisation and the Territorial Force is the direct outcome of those conclusions and is the result for an endegree to build up a system which will have a definite object before it and will survive the fits of economy at any price with which from time to time the different Governments of either party is soled. Survive that is to say in so far as the principle and main organisation is concerned. If the principle of organisation is kept in view it is easy to see where peremptory orders for economy can be given effect to with least in school and where increase resultant on the next panie can be made. The concusions arrived at may conveniently be recorded in whas follows . First yoth it a force for If me Defence is a necessity because however much the Navy might keep the sea the landing of a small force is an easy thing. The landing of a large force on the other hand is a very difficult thing in view of the proximity of landing places to torpedo best centres, and a "the proparation that an oversex expedition on a Parge some even for a short voyage demands. The existence of a Home Determine Force of reserved a size in a state that could take the hell would at once force the grander to come in wich strength that the whole operation would be a most proposed on With a no all determinent recommends in a direct in possible, with modelinger I red er one that had no prepertied organisate mat becomes an easy matter. The read pent of with inpertance of flexy one the importance attained to garagette burnt rid bore a working field organisation is a more organization of the organization of the contract of the The most open to was that our fire greater the had distinct soly so record the attracts. We have no objects from rein led a and there is that is well control to detend in animary for a On the reason the Low Control on regard to the grant to of in the test of any exercity is reasoned as either either in a morthe From his tenter at 1 the Core and a fit read by reason of the fact object of the same area. But the same size of good at a other and present in same and same er the land of the the the third of the dispersion a most the carry was been as a significant as a second The morning that our position demands a far stronger expeditionary Army than had formerly been held sufficient.

These two points may be summed up in a mobile home defence force and a strong expeditionary force, with of course the inevitable maintaining machinery for foreign garrisons.

These points however were not all. It was recognised that, however much a small body of English folk might talk, the country had not the least intention of listening, at present unless severely frightened, to any proposal for compulsory service, in any form. That no party would ever think of suggesting it. That Parliament and Cabinets danced to the people's tune, and that any movement of this sort must come from the people. It was also recognised that neither party would think of increasing the military budget, and would be far more likely to reduce it, if only for the very simple reason that it is close on a thousand years since the Conquest. On the Continent, where every one can almost remember the humiliation and horror of invasion it is all different. The indifference of the public was a factor to be understood. To do this it is only necessary to see Charing Cross or Cannon Street or one of the North London termini between nine and ten of a week-day morning. Tens of thousands of what the well-to-do business men in the first class carriages, call the 'poor clerks,' stream citywards. Each earns enough margin for perhaps a fortnight's holiday with his children at the seaside; no more, barely that. Every turn of the money market and every slack in trade sends numbers to starve. Each has a vote. Is it to be wondered at that all English Premiers shun the strong policy, will run no hazards and know that no war of initiative or no policy that can lead to such is possible save when the whole country demand it! The demand for compulsory service or a strong policy must come from the people. Why the mews at the back of Park Lane have five times the votes that the Lane itself has!

The consideration of these points brought home clearly the conclusion that the only solution for the time being was to examine our existing resources to see how far they could be made to fit in with the needs of the situation, and also to so combine them in one scheme that the ruthless demands of the proletariat for reductions could, it needs be, be complied with, without wrecking the principles of organisation.

# The Thousand Experts.

Another factor was worth studying. In other nations the military expert speaks with one voice, the voice of the General Staff, who have no doubt wrestled mightily within themselves, but present one front to the world. In England we have a thousand voices. Retired admirals, retired generals, some with no knowledge, some with only partial or out-of-date knowledge argue and counter-argue every point. It is impossible for any genuine inquirer of the public to get at the truth of the Army and Navy. A thousand soi disant expert opinions quarrel with each other. The business man may



Wosdley McIntosh.
Harrington Wheel.
Durois. Foley
Allen. Sheiders.
Chambers. Barns.
Berniek. Mathews.

Sergeants of Sepays, 1st Carnatic Batt.

Tho. McEvay
W. Lawrence,
At Bangalore—
A. Sutherland,
Lemes

Kingbury,
At Arnee—
Cadiny,
Bruce

7th Carn. Batta.

Handsdown.

At Bargalore—
Harlow,
Broom,
11th Cren, Britin.

At Bang don — Brockie

-2nd Circur B itta  $D_{m{a}}$ 

Higgins,
Habinsworth,
Caney,
Shipman, D.

At Bar g dore —
Middleton
Ed. Pomer,

Sepay Grandes, 17th Carn. Baten.

Thos. Duttan Bange.

Atchineon.

21st Corn. Do.

Wm. Dolton.

Richd, Brodbridge and Alex, Mariroe

Qr. Mr. Sergis, taken in front of Gent. Monrack the on ye march to Conjeveron.

No acct of ve Sorges of ye 14th and 16th Barns 7 may do from Ching epot.

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# Sepoy Corps.

10th Bn. Sepoy. Comdd. by Lt. Gillon. 8th Compy. of 13th do. do. by Lt. Lind. 5th Compy. Sibandy Gungs, comdd. by Lt. E

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MAJOR-GENERAL R. 1. SCALLON, C.B., C.I.E., D.S.O., ADJUTANT GENERAL IN INDIA, IN THE CHAIR.

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In this lecture I do not propose to argue whether or not the new organisation is wise or sufficient. As a soldier I accept what the authorities decide, but I hope to put before you, what has been aimed at and why.

# The Establishment of the General Staff and the Defence Committee.

The Memoranda that the Secretary of State for War has presented to Parliament explaining the principles for the new organisation have been hopelessly mangled in the press, and the fact that the general public, soldier and civilian has only been able to read such garbled extracts, has gravely militated against their proper understanding. No scheme of reorganisation or organisation is worth having, unless it has been considered in its broad lines, and those broad lines assimilated to general policy. If the broad lines are right, the superstructure and its details are matters to be settled separately. When therefore the critics of the scheme say that it is good "on paper," they are giving the highest praise. If it is good on paper, it means that the general lines and principles are correct. I hope to show to-night, to those who have not been able to study for themselves the whole text and previous conclusions, that the new organisation is, for the first time in our history, based on a careful prolonged and systematic study of our military, naval and political assets and liabilities. To do this, I must ask you to turn back to the early spring of 1904 when the Esher Committee, usually spoken of as the Triumvirate, published their report. The Committee included Sir John Fisher, the present First Sea-Lord, and Sir George Sydenham Clarke, who as you know is now the Governor of Bombay. That Committee made a very comprehensive report, and made many sweeping recommendations of which the majority were at once accepted with a promptness which had some resemblance to a coup d'état. The recommendations that affected the question we are considering were as follows. The Committee pointed out that practically the whole of the staff at the War Office were concerned, and solely concerned, with the problem of the administration and maintenance of our world wide Army on a voluntary basis, and that no one was concerned with the preparation for war as a whole. The administrative military needs of a nation like ours were so imperative and so pressing, and so complicated that those engaged in dealing with them had no time to study the preparation for and the consideration for war. The result of this in the past was evident in every military reform or action that had ever been taken. It was

the result of patchwork consideration, usually carried out in deference to agitation, and not the result of the reasoned recommendations of men who spent years in getting au fait with the problems and precedents of war that immediately effected our nation. They pointed out that though we had a very efficient mobilisation branch, it was only concerned in arranging to mobilise such small portion of our forces as Parliament on no grounds, save of economy, was prepared to per-Prior to the South African War, a half-starved Intelligence Branch cried aloud in the wilderness to little effect. After that war the Intelligence Branch was very much enlarged, but still no big division at Headquarters was formed to concern itself solely with such matters as preparation for war. It was recommended therefore that a great General Staff should be formed at Headquarters charged with the study of and preparation for war, and that it should be part of a General Staff charged with the training of troops for war. the greatest change that has ever yet been made in England, and one that Royal Commission after Commission has at one time or The recommendation was put into effect other recommended. forthwith, with the major portion of the other recommendations of the Triumvirate. In addition to the inception of a General Staff, there was one other recommendation equally important from the point of view of the study and preparation for war.

A few years earlier Mr. Balfour, when Premier, realised that though the responsibility for naval and military policy must rest with the Cabinet and Premier alone, still it was a matter of which Premiers as a class had little intimate knowledge. He therefore instituted a Committee of Imperial Defence composed of the civil and military heads of the Army and Navy, and such other persons as the Premier might nominate, to advise him. Prior to this there had been a Military Defence Committee within the War Office, and a Colonial Defence Committee for considering the joint affairs of the Empire, but never on the comprehensive scale of the Imperial Defence Committee. The Triumvirate however pointed out that this big Defence Committee was all very well in its way, but that it had no means either of writing up the history of its own deliberations, nor of having complete and carefully prepared data put before it when it met, so as to secure that it had a correct and all sided appreciation before it of the question under review. They therefore recommended that a permanent Secretariat should be formed, under some senior soldier or sailor, with a small naval and military staff to co-ordinate the view of the General Staffs of the Army and Navy and to be certain that all possible information and history of any subject that the Committee could have to consider should be to hand. This recommendation was also accepted and Sir George Sydenham Clarke was appointed the first Secretary. He has now been succeeded by Captain Otley, R.N., who went to the Hague Conference as a naval representative.

We now come to the bearing of the foregoing on the subject of my lecture. The Defence Committee and especially its

Secretariat and the General Staff of the Army with the Intelligence Division of the Navy (which represents their General Staff) set to work to study in a comprehensive and exhaustive manner the whole question of the naval and military needs of the nation and the operations in which there was any reasonable possibility of our being engaged and also the trend of politics and the action that they might entail in the future. A systematic survey of this sort had never been made except by occasional unofficial unaided efforts, or by Royal Commissions which had never the opportunity of studying all the data, probably because there was no one in England who could give them such or could collect the main points of the problem for them. For two years the General Staffs and the Defence Committee studied this subject in all its bearings.

Conclusions arrived at by the Defence Committee.

The present organisation and the Territorial Force is the direct outcome of those conclusions and is the result for an endeavour to build up a system which will have a definite object before it and will survive the fits of economy at any price with which from time to time the different Governments of either party is Survive, that is to say, in so far as the principle and main organisation is concerned. If the principle of organisation is kept in view, it is easy to see where peremptory orders for economy can be given effect to with least mischief, and where increase resultant on the next panic can be made. The conclusions arrived at, may conveniently be recorded much as follows:—Firstly, that a force for Home Defence is a necessity, because, however much the Navy might keep the sea, the landing of a small force is an easy thing. The landing of a large force, on the other hand, is a very difficult thing, in view of the proximity of landing places to torpedo-boat centres, and all the preparation that an oversea expedition on a large scale even for a short voyage demands. The existence of a Home Defence Force of reasonable size in a state that could take the field would at once force the invader to come in such strength that the whole operation would be almost impossible. With a mobile defence force invasion is almost impossible; with no defence force, or one that had no proper field organisation it becomes an easy matter. This is a point of vital importance, and explains the importance attached to giving the Territorial Force a working field organisation, as a more urgent factor than that of higher training. The next point was that our foreign liabilities had immensely increased of recent years. We have a continental frontier in India and Canada that we would be bound to defend in immense force. Our liabilities in the Low Countries, in regard to the guarantee of neutrality had immeasurably increased since the fortification of the French frontier and the German counter-line, by reason of the fact that these are both so strong that either aggressor would, unless cribbed and confined by the threat of force, far preferably select the easier way by violating the easy neutral way. This means that our

position demands a far stronger expeditionary Army than had formerly been held sufficient.

These two points may be summed up in a mobile home defence force and a strong expeditionary force, with of course the inevit-

able maintaining machinery for foreign garrisons.

These points however were not all. It was recognised that, however much a small body of English folk might talk, the country had not the least intention of listening, at present unless severely frightened, to any proposal for compulsory service, in any form. That no party would ever think of suggesting it. That Parliament and Cabinets danced to the people's tune, and that any movement of this sort must come from the people. It was also recognised that neither party would think of increasing the military budget, and would be far more likely to reduce it, if only for the very simple reason that it is close on a thousand years since the Conquest. On the Continent, where every one can almost remember the humiliation and horror of invasion it is all different. The indifference of the public was a factor to be understood. To do this it is only necessary to see Charing Cross or Cannon Street or one of the North London termini between nine and ten of a week-day morning. Tens of thousands of what the well-to-do business men in the first class carriages, call the 'poor clerks,' stream citywards. Each earns enough margin for perhaps a fortnight's holiday with his children at the seaside; no more, barely that. Every turn of the money market and every slack in trade sends numbers to starve. Each has a vote. Is it to be wondered at that all English Premiers shun the strong policy, will run no hazards and know that no war of initiative or no policy that can lead to such is possible save when the whole country demand it? The demand for compulsory service or a strong policy must come from the people. Why the mews at the back of Park Lane have five times the votes that the Lane itself has!

The consideration of these points brought home clearly the conclusion that the only solution for the time being was to examine our existing resources to see how far they could be made to fit in with the needs of the situation, and also to so combine them in one scheme that the ruthless demands of the proletariat for reductions could, if needs be, be complied with, without wrecking the principles of organisation.

# The Thousand Experts.

Another factor was worth studying. In other nations the military expert speaks with one voice, the voice of the General Staff, who have no doubt wrestled mightily within themselves, but present one front to the world. In England we have a thousand voices. Retired admirals, retired generals, some with no knowledge, some with only partial or out-of-date knowledge argue and counter-argue every point. It is impossible for any genuine inquirer of the public to get at the truth of the Army and Navy. A thousand soi disant expert opinions quarrel with each other. The business man may

well ask, "Well until the Army and Navy know its own mind it's no use my opening my purse strings." So that there is ample room always for those who do not wish to be persuaded to do nothing. In the past ministers have bitterly complained that they could not get a military opinion that was authoritative or even thoroughly considered. This as far as ministers are concerned has been formed by the institution of a General Staff. It will be long however before the public and the half-penny Press will put this before the letters from Admiral and Vetus and Miles and the like.

The result of the foregoing conclusions was the determination to try and organise the large unorganised portion of the three quarters of a million men in England into an entirely available soldiery, on the foregoing principles.

# The Existing State of Affairs.

Examining the Regular Army at Home it was found that there existed enough regular soldiers in England over and above the Coast Artillery to furnish, if all could be made available, a force of the equivalent of one very strong cavalry division and three continental Army Corps. If these could be made available for war abroad, here with only the expense of providing departmental cadres was a force of real size for the frontier and continental liabilities. Was it possible to make them so available?

Then we had some 85,000 Militia of non-descript liabilities legally only available for Home Defence, but who might serve abroad if they so fancied. We had also some 25,000 Yeomanry, under different laws and conditions from the Militia. Again 270,000 Volunteers, only liable to be embodied for defence, organised into brigades it is true, but with practically no field artillery, no trains, no hospitals, no ammunition columns, no supply columns, no divisional organisation—in fact an immobile Home Defence force. How was it possible to employ these three classes of soldiers for Home Defence? How was it possible to so organise these forces that they should be an army which if not highly trained should at any rate in the hands of a competent staff be fit to move to certain positions in England, or to be hurled in attack on an invader? How was it possible to so combine these that instead of being rival formations supported by different classes in the country and different partizans in the House, all equally jealous of any public money spent on another, they should form one homogeneous whole supported by the people of the country as a whole? A mobilisation scheme for a force to be composed partly of Regulars, partly of Militia, partly of Yeomanry, partly of Volunteers, with an Honourable Artillery Company thrown in, in which every component was under different disciplinary laws, different laws of liability to service, different strengths and different pay, was a problem practically unsolvable, though the Mobilisation Branch at the War Office had made herculean efforts and evolved the best scheme possible. Only our being so accustomed to the thought of these different forces as part of our constitution could blind, even the most uninformed, to the absurdities of the situation.

Another difficulty was that all the forces, especially the Volunteers, had been allowed to develop in accordance with local predilections and not in the furtherance of any special plan. There were, for instance, twice the number of engineers in England that could under any possible contingency be used. The troops nearest the big coast fortresses, such as Portsmouth, Plymouth and Chatham, were often the exact opposite of those required for the defence of those forts. The artillery for them had to come from Scotland, Ireland and the North of England, so that bringing them down to the forts that they should man in war (an essential part of training) was too expensive and absorbed too many days of the short training period available to be possible more than every third year or so. To put this right meant just as much an upheaval of local feelings and fancies as any wider and more far-reaching change.

#### The Possible Solutions.

Many solutions have been offered, a compulsory Home Defence force, which of course no one will listen to, then a plan to make the old constitutional force the Militia, into a properly organised and complete field army for Home Defence, and fifty others. The plan to complete the Militia as infantry, cavalry and field artillery was a fascinating one, because every one recognised that the old force had a long history behind it and had at times rendered great service. The partizans of the Militia naturally believed this the real solution, but the proposal ignores the one fundamental law at the bottom of the whole subject. That is, that the Militia is a force that must depend, as we understand the word, on an agricultural or pastoral population, or at any rate one that has slack employment at certain terms of the year. The gradual move of the rural population to the towns has entirely changed the whole matter of the Militia. Since this force, after having been in abeyance since the Waterloo period, was re-raised in 1852, after the Duke of Wellington's correspondence with Sir John Burgoyne, it has never been anything like up to strength. At the beginning of this year with a paper establishment of 120,000 men it has never been much over 80,000. There is not a population in these days that can supply a voluntary Militia training for a month in the year. Any scheme for a glorification and completion of the "Old Constitutional Force" was out of court from hard fact. In certain districts of England where there was still a population on the land, the Militia flourishes, in others it languishes. Also the law of the Militia is such that it cannot be used abroad unless it volunteers, and further men cannot be transferred from one cadre to another even in war time, to aid a falling corps from one that is overflowing. old Ballot law and the machinery for using them are so out of date that to use them would produce a thousand anomalies. This law of the ballot which so many people have dwelt strongly on is the most vicious of all compulsory laws. Universal service means that high

or low, rich or poor, go to the ranks as a matter of common lot or right. The ballot introduces the question of the "Bon numero," when each one hopes to draw a lucky number and escape. Rich men were allowed to provide substitutes. Anything wider apart from the idea of national service than the ballot system of providing a quota of soldiers is hard to imagine. The Militia with its laws and customs and failures was a force from which, despite its services in the past, no very large expectation could be drawn. Mr. Cardwell had always planned to make it in war time a portion of the line with which he connected it, but this had never borne any fruit for his plans had never been completed. One of the pressing lessons of the Crimea, much emphasised by those of South Africa, was the need for some system by which corps in the field could be brought up to full strength and kept there. None existed. After the Crimea the Militia Reserve was formed, which consisted of a number of Militia men who for a bounty assumed the liability of Army Reserve men in war time and could be drafted to the line. This Reserve, perhaps some 17,000 men, was all absorbed in the South African War, and when it was gone there was no machinery for providing more. After the war in deference to a cry that the Militia Reserve emasculated the Militia, it was abolished, and for a short time a purely Militia Reserve was established that only provided ex-Militia men to reinforce Militia corps. The Army Council had again and again urged that it was absolutely necessary to provide for this important matter of maintenance of troops in the field. They further urged that if the Militia could serve abroad they should be liable and not merely allowed to volunteer, as under the latter conditions it was impossible to be able to calculate on their services in making plans. It was therefore evident that some definite action was needed to meet with these objections.

#### II.—THE SOLUTION ACCEPTED.

The Army Council, the Defence Committee and the General Staff finally agreed on the following main principles to govern the whole organisation of the hetorogenous forces of the kingdom.

They may be summed up in the briefest way.

First,—The Regular Army, with the exception of the Coast Artillery needed for the day-in day-out watching of the vital defences of naval ports, should be considered as existing for service abroad as an expeditionary force and not as part of the Home Defence organisation. Secondly, that the Militia should be so changed that only the number of men likely to be forthcoming should be needed, and that it should exist as a reserve for the Army in war time both by finding, reinforcing drafts for their line battalions, or being ordered abroad as complete battalions, for work on communications and as foreign garrisons. In addition to the infantry, the whole of the artillery not required as garrison artillery which the Volunteers could do equally well, to be trained as field artillery, to be used for expanding on mobilisation, the numerous ammunition

columns required for which no reserve existed, and no means of providing one, and also as in the case of the infantry, finding reinforcing drafts to reinforce batteries in the field. The same principle to be adopted with regard to Army Service Corps companies, for whom it was impossible to afford in peace time a full strength of privates.

The Militia as such was to disappear and be invited to join the new force to be called the Special Reserve (which it has now done almost en bloc). Each Line battalion was to have one Special Reserve battalion behind it as a third battalion, or in the case of four battalion corps two Special Reserve battalions the 5th and 6th. Certain corps were to have extra Reserve battalions, which though on the same terms as the others were primarily marked as line of communication troops. These extra battalions, numbering 27, chiefly exist in Ireland and in those part of England and Scotland that still furnished full Militia corps. The terms of enlistment for these corps are six months' training on enlistment and three weeks' annual training and musketry with the full liability of the Army reservist. The field gunners are to be trained by the Training Brigades of Royal Artillery. For many years under the late Government and under the present there have been unpleasant rumours that the treasury would not stand the enormous number of field batteries that were formed after the South African War, when fifty were added to the Army. It is now stated that the present Government were abolishing 33 batteries. This is entirely a mis-statement. The situation is this. When it was decided to maintain the Regular Army for war abroad, there was enough infantry to make six strong divisions, not on our old strength of two brigades each, but on the Indian and continental strength of three brigades. In other words, the equivalent of three continental army corps. After fitting these six divisions out with the unprecedented number of 70 guns, viz., 9 batteries of Q.-F. field guns, 2 batteries of field howitzers, and one heavy battery, there were 33 field batteries left in England. I will refer to these again when I speak of the Territorial Artillery. Suffice it to say here that for reason to be explained later, it was after weighing many pros and cons, decided that these could best be utilised by setting them to train the officers, gunners and drivers of the Special Reserve Artillery, and the Officers and N.-C. O.s of the Territorial Artillery. If you turn to Army Orders of December 1907 you will there see that, so far from these batteries being abolished, they have the whole of their R. A. officers intact including the colonel and adjutant, the whole of their staff sergeants and four sergeants and corporals per battery, with their skilled ratings, and the total rank and file of 184 per brigade. This is an establishment that can be turned into a working battery again in a very few days.

We now come to the third principle. That is that the whole of the defence of the country shall be entrusted to a volunteer force, (except the immediate coast defence forts) trained and serving much on the principles of our Volunteers, but completely organised into

divisions exactly similar to the six divisions of the Regular Army, with all guns and departmental corps, under regular generals of the Army with a regular and trained army staff. That is to say that this force would be embodied as soon as the expeditionary force began to move, and if all that force went, would alone be charged with Home Defence. Now it is very evident that a force of this sort, with General and Staff to lead and place them, and machinery to feed them, trained in the divisional idea, is a very different fighting force to a mass of unorganised Militia and Volunteer brigades, who had no machinery to get them into place, no field artillery and no departmental units and no Generals and Staff to lead or help to train them.

All troops should exist only in the right proportions, and the expensive folly of having thousands of engineers that you could not use, merely because a certain district fancied engineers, was no longer to be tolerated. These three principles, the Regular Army for war abroad if necessary, the late Militia an integral part of the Regulars for the special purpose of reinforcing and maintaining them in the field, and the Auxiliary Forces welded into one complete homogeneous whole for Home Defence, must be clearly understood to follow all the recent changes. In this connection it should be remembered that the six divisions of the Regular Army could not go abroad simultaneously, and that from first to last at least a month must take place, giving this amount of time to embody the Territorial Force, which should have considerable entity by the time it was left as the sole defenders of the country. With individual efficiency at least equal to the Volunteers, but probably greater, owing to the improved facilities for training, and complete organisation of staffs and components, a homogeneous Auxiliary Force is a very different matter to the collection of corps and brigades who had none of the cohesive elements of an army.

### III.—THE TERRITORAL FORCE.

Having outlined the somewhat puzzling arrangements by which the late Militia are now a portion of the Reserve of the Army, freed from hampering laws, it now remains to turn to the new organisation for Home Defence concerning which the controversy has raged so fiercely.

# The Swiss parallel.

For some years past different soldiers in England have been drawing attention to the Swiss Militia system, and pointing out the excellent results and its suitability to English needs. When the possibility of doing something to improve the position in England came up, the General Staff made a very exhaustive study of this system which also interested the Secretary of State for War. The Swiss system is that of a compulsory Militia, of which the terms of service, varied, from sixty to eighty days training on enlistment, with ten days yearly training for the cavalry and roughly a fortnight's

training every second year for the other arms. This has just been changed last autumn to an annual training of ten days for all corps. N.-C.O.s on appointment do a further training, and officers do still more and have to do a period of training in each rank before promotion. The results are extraordinarily good, especially in the Artillery which has the latest gun, and is horsed by hiring, till war when the horses are requisitioned.

The organisation is as follows. Each country has a quota of troops that it has to provide, and the Country or Canton Council do all the recruiting and administer all the Government funds for barracks, ranges and maintenance. They appoint all officers except unit commanders. The Federal authorities are responsible for all command and training, and for the permanent cadre of instructors, who are first class professional soldiers, and conduct the training centres that exist over the country. The training is assisted by a widespread and extremely popular system of village rifle ranges of which even in that small country there are some 4,000. These are administered by the county authority, with federal travelling inspectors. All the militiamen fire in their own time certain annual refreshing courses on the local ranges.

Now when we come to the whole question of the organisation of an army, it resolves itself into two entirely distinct questions, one. what shall the strength be, and how shall it be grouped, organised and controlled, and the other, how shall we get the men! The latter is entirely distinct from the former, and has hardly any relevance to it. In the language of Simla, it can be taken up on another file We now therefore come to the point. Mr. Haldane, the Army Council and the General Staff, seeing that no force can at present persuade the British nation to demand or accept compulsory service in any form, have devised an organisation on the Swiss decentralized model enlisting as in the Swiss Cantons all the local influence and enthusiasm which is there such a feature, and which so makes for success. The separate question of the finding of the men has been treated differently. The ranks of the organisation are to be filled according to the sovereign will of the people, by voluntary enlistment as in the Volunteer Force. Whenever the sovereign people demand otherwise, without any fresh upheaval, and without any fresh organisation, the men of each county can be passed, high and low, rich and poor, through the ranks of the county contingent. Some very clever people will tell you that Mr. Haldane and the General Staff have their tongues in their cheek, and know that this will fail, and that the country will then have to take to compulsion perforce. This is a very wrong view to take. They know that only the people can compel compulsory service. All they have done is to give an organisation that will admit of either form of service, which organisation is a going workable business concern designed in its numbers to meet the military needs of Home Defence. If the country will support it as freely as it has supported the yeomanry and volunteers, it will be an organised force of at

least the same individual efficiency, instead of an unorganisea one. The introduction of the county system has already stirred that local spirit, which is such a trait in England, to exert itself in the efficiency of its local forces. There is every prospect that for this reason a far higher standard than possible in the Volunteers may be attained. And the moment England wills it so, the compulsory system may be applied to the methods of filling the ranks.

## The Organisation of the Territorial Force.

The Territorial Force is organised into fourteen divisions of all arms, exactly similar in its component parts with the six divisions of the Regular Army, fourteen "mounted brigades" and further coast defence troops and certain "Army troops," Each county has a certain allotment of troops, and each County Association, which has been formed by law, is charged with the maintenance and administration of the forces allotted to the county. The funds for these purposes granted by Government are administered by the Association on certain established lines. Out of their Government grant each Association pays a Secretary on a scale varying with the size of the county contingent. The training and command of each division is under a Divisional General of the Regular Army, assisted by one General Staff Officer, and one D. A. A. and Q. M. G., these three being officers of the Regular Army on full pay. The force when out for training is paid and administered as a division of the Regular Army, with the same machinery. The Brigadiers and Brigade Majors come as before from the Volunteers or ex-Regular officers, and are paid £150 and £100 a year respectively plus the pay of their rank when out for training. In the small shilling monthly Army List you will now see each County Association and the troops they control, with the names of the members and the Secretary. You will notice in the names of the Presidents and Chairmen of Associations some of the first names in England, both of the county folk and of soldiers, who may be relied on to develop the local spirit. For instance in Surrey Sir Edmund Elles is the moving spirit. In a Welsh county General Tyler, late Inspector-General of Artillery in India, is a leader and many another. Now the military organisation of England and Scotland is in outline as follows. (Ireland found no Volunteers, and has no Territorial Force, but is detailed for an equally important force as will be explained). There are, exclusive of the Aldershot Command which is a separate war enclave, five commands in England and Scotland, each consisting of two districts, and again in addition to these the London District, which is a separate command. Each of the five commands, Eastern, Western, Northern, Southern and Scottish, is commanded by a General Officer Commanding-in-Chief. The districts in these commands are numbered one to ten. Territorial Divisional area corresponds with one of these districts, except in the case of districts 3 and 5, Lancashire and Yorkshire, always the great centres of Volunteer enthusiasm. These

districts each contain two Territorial Divisions, as does the London District, making fourteen in all. The General Officer Commanding a Territorial D. vision, for command and war training is under the General Officer Commanding-in-Chief of the Commands. whole organisation is one therefore of method and simplicity fitting in with the general organisation of the United Kingdom. I may here conveniently allude to Ireland, which also has a General Officer Commanding-in Chief. There is no Territorial Force in Ireland. and the Irish Militia over and above the Third Reserve Battalion of the Irish Line Regiments find the bulk of the 27 extra Reserve battalions which are available for service abroad as garrison communications or field army. The Irish Yeomanry are on a different footing from the English and Scotch Yeomanry. The latter abandon their name "Imperial Yeomanry" for "Territorial Yeomanry," and the Irish Imperial Yeomanry, now become "Irish Horse" and a portion of the "Special Reserve," that is to say, they accept liability as Reserve Cavatry of the Army, available for service abroad whenever the Reserve is called out. They are, it is understood, to form the divisional cavalry of the regular divisions, relieve all regular cavalry for the great strategic rôle, in the cavalry division of four brigades.

Now the Territorial Force has been formed by allotting to each county such of the existing Corps of Yeomanry and Volunteers as fitted the requirements or organisations, and these corps have been transferred with their existing names. Surplus corps of one arm have been required to convert to the arm needed or accept disbandment, and missing corps have been raised. The whole of the work of organisation, transfer, etc., has been done with the help of many committees of prominent Volunteer, Yeomanry, and Militia, C. O.s. and is in no sense a War Office scheme crammed down the throats of men who knew it would not work, as the Press like to describe it, and in many ways is the direct outcome of the Duke of Norfolk's communication on the Auxiliary Forces. The whole constitution of the force by divisions and brigades is shown by a recent Army Order and in Army Tables. In an addendum to this lecture is a reference to all the various memoranda and regulations explaining the principles and detail of the whole question and they are well worth obtaining as explaining the extremely comprehensive and thorough process of investigation, deliberation and reasoning the whole organisation is based on.

## The Territorial Artillery.

It would be too long to enter into all the pros and cons of this debatable question, but in all the discussions the main points have never been brought forward by the half-informed press. They are as follows. The strength of the Territorial Force of some 3,000,000 men is based on the fact that if the troops that can form to meet an invader are not sufficient to win the first fight, we may have to form again in the North or Midlands with the more distant divisions.



The whole of the fourteen divisions must therefore have field artillery an invasion is just as possible from the East coast as from the South. That is to say the Artillery must be distributed with the divisions to which it belongs. Some 180 batteries all told, are required for the whole force. Thirty-three regular batteries remained in England over and above those required for the expeditionary force. The problem was what to do with them, or how to complete the artillery of the Home Defence Army. The courses open were three:—

(1) To form over a hundred new batteries of Regular Field Artillery and accept, as a rule, the dictum that Auxiliary Field Artillery were not possible. Against which was the example of the Honourable Artillery Company's Field Battery in South Africa and the practice records of its two batteries in practice camps in England.

(2) To complete the remaining batteries required by making more batteries on the Militia system like the three that have existed for some ten years with considerable success in Lancashire. These batteries had a commanding officer of the Royal Artillery, as also

a colonel, and some 40 per cent of regular artillerymen.

(3) To form an entirely territorial artillery, and use the 33 regular batteries as training centres like the highly expert training cadres which train the Swiss artillery, and which would have to be made in some form, if only to train the field artillery special reservists. Now the necessity of these latter as has been explained was pressing, as without them the large number of ammunition columns that existed on paper could not be mobilised, nor had there ever existed in England any machinery for furnishing them.

The counsel of perfection was course (1). It is obvious enough. But it amounted to practically doubling the field artillery of the Army. Neither party, Liberal or Unionist, was the least likely to listen to any such proposal, nor could any one see how a larger number of recruits for the purpose could be forthcoming. Of the corps that were reduced last year, several of them could not recruit to full strength, and the yearly intake of fit recruits was just about enough to keep the present regular force going and had little elasticity in humdrum times. The raising of more batteries would be a very great difficulty. The same arguments of expense and recruits told against the second course, though not to the same extent. It would have meant at least four thousand extra men, probably many more.

On the other hand as regards the third course they had had most extraordinary offers from various Volunteer Artillery Corps\* of the liabilities they were prepared to accept if converted into field artillery, and the amount of training they would agree to undergo. Further there was the Swiss Artillery, which with a very small amount of training was able to make a very creditable show on hired horses.

<sup>\*</sup> Vide Mr. Arnold Forster's book "The Army in 1906."

For this latter point I can certainly vouch. I had the good fortune last year, with the permission of the War Office, to accompany a party of Members of Parliament and representatives of the Auxiliary Forces and the Labour Party to Switzerland as Times correspondent, which organised by the National Service League went in response to an invitation from the Swiss Government, to study their Militia and see some of it at manœuvres. It was certainly an extraordinary eve opener to the soldiers of the party. I have not time to describe the essentials of what we saw, but we were given unique opportunities of seeing everything, and visited every important military centre. 45,000 men took part in the manœuvres, and they were essentially an army moving and operating as such, and not a Militia as we understand the word. I saw innumerable batteries of field artillery, which manœuvred at a suitable pace over all sorts of country, and in their drill, fire discipline and general appearance were good. I unfortunately did not see them at practice, but as each battery fires 700 rounds at their camp they ought to understand something about it. Since I saw them, when they only trained as a battery every two years, the law for ten days' annual training has been introduced. Now though we are not having the two months' recruit training, with the extra courses to young N.-C.O.s, and cannot have it on the voluntary system, we have in many ways the same amount of training, and our annual camp should be as good as theirs, with the help of the valuable training centres that the 33 regular batteries told of for that purpose will afford. So it was decided for weal or for woe that the experiment had very considerable prospect of success. Whether that will be the result or not time will only show. the Swiss Artillery is the last word on the subject of the possibility of a short time field artillery of some practical use. It will be for us to see if the training that we enforce is sufficient. One other point. Artillery that is to make few marches in their own country where forage and water and metalled roads abound, requires an entirely different standard of horsemastery both on the part of drivers and officers, to an artillery that has to be fit to march from the Indus to the Oxus, on no roads, scanty water and what an optimistic commissariat will tell you is a full ration of forage.

# The Limitations of the Territorial Force.

The Territorial Army is not meant to be a first class fighting force but it is meant to be a force that can take the field in such strength that the invader cannot raid with a small force, and so that his large force may have to face all the dangers of a landing at a point which is only a few hours' steam from a torpedo-boat and submarine centre. If 300,000 organised troops with a full complement of guns are to be met in a country in which the railway system permits of immensely rapid concentration, an invader has to be prepared to cope with it and find the situation very different from that which presented only unorganised brigades of riflemen. And directly he has to cope with such a situation the difficulties of landing in safety are

multiplied a thousand-fold. In addition there is the increasing efficiency which accrues from every day's embodied service between the day when the regular force is ordered abroad and its final embarkation.

## IV .- SUMMARY.

I would like to summarise briefly the essential points I have tried to make out, and they are much as follows:—

(1) The organisation is the result of the most careful survey of possibilites, potentialities, needs and assets, on a scale that has never before been possible, by a body of men specially organised to that end.

(2) It puts our Military Forces on a definite footing, with a definite goal to aim at. Should it be insufficient, it can be increased on the same lines, and should the country will it, compulsory service may be substituted for voluntary service without any fresh organisation.

(3) It has been so organised that though the demands of the populace shall clamour for ill-considered economy, the principles of organisation shall not be affected.

(4) Three great principles underlie the organisation of the actual troops.—

(a) The army for war abroad, six divisions and four cavalry brigades, of which the divisions are on the large Indian form.

(b) The Militia to be brought into the army, as a form of reinforcing reserve, by men or by corps, and to be taken out of the Home Defence calculations.

(c) The Yeomanry and Volunteers to be merged into one Defence Force commanded centrally, adminstered locally, complete in all details exactly as a division of the army, with regular divisional generals and regular divisional staff, having an organisation equally well suited to a voluntary or compulsory system of recruitment.

(5) The details of these organisations are the result of careful consultation with the County and Auxiliary Force representatives and is not a purely General Staff scheme jammed on two unwilling victims.

### NOTE TO THE LECTURE.

The Chairman in thanking the lecturer dwelt strongly on the fact that the Government and the Army Council for reasons amply convincing to them, and which had been touched on by the lecturer, had re-organized our Second Line Forces, and organized the whole of the Regular Army for war abroad if need be. It therefore only remained for all officers to do their best to understand what has been aimed at and to help it in every way. In India such help could only consist in refraining from joining in the criticisms of the press.

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Full information regarding all the principles and points in the new organisation may be found in the following pamphlets presented to Parliaments by the Secretary of State for War, while the actual Army Orders that give effect to the changes may be read in any Military Office in India as given below:—

## Pamphlets.

Memorandum on Army Organisation, 30th July 1906. Price 1d.

Memorandum on the Military Forces in the United Kingdom, 1907, 2d.

Memorandum explaining the Territorial and Reserve Forces Bill, 1908, 13d.

Principles to be kept in view in Training the Territorial Force and the Special Reserve. Price 2d.

Territorial and Reserve Forces Act, 1907, 31d.

All to be had from Wyman and Sons, Fetter Lane, London, E. C., or from Hugh Rees and Co., Publishers, Pall Mall.

## Army Orders.

Special 23-12-07. The Formation of the Special Reserve, and Transfer of Units to it.

Special 18-3-08. Transfer of Personnel to Territorial Force.

, 18-3-08. Organisation of the Territorial Force.

" 20-3-08. Transfer of Auxiliary Corps to the Force.

31-3-08. Detail of all the Forces in the United Kingdom, as now organised.

" 23-4-08. Transfer of all Medical Units to the Force.

## THE BATTLEFIELDS OF NORTH ITALY.

## By LIEUTENANT-COLONEL THE HON'BLE E. NOEL.

### IX.—Trebbia.

In continuing these notes on the above battlefields it will be necessary to extend our view from the MINCIO region over the western half of North Italy.

When the war of the Second Coalition broke out in 1799, Bonaparte was away in Egypt, and during this year the French lost nearly all that they had won by his brilliant campaigns of 1796-97.

The opening events of this war, with the Austrian victory near Verona on April 5th, were noticed in Article VII (January 1907) while the subsequent siege of Mantua by the Austrians was recorded in Article V (October 1906). The battle of the Trebbia occurred during that siege, and was the occasion of the blockade being succeeded by regular siege operations.

Soon after the battle of MAGNANO, April 5th, the Russian contingent came up under command of SUVOROV, who became Commander-in-Chief of the Russo-Austrian army in Italy; MELAS commanded the Austrians under him, and KRAY undertook the siege of MANTUA.

The spirit of SUVOROV infused new energy into the allied army. He was a thorough Russian, a firm believer in the bayonet, and he sent his own officers into the Austrian camp to instruct their soldiers in the use of his favourite weapon. When, shortly after his arrival, the Austrian Chief of the Staff suggested making a reconnaissance, SUVOROV answered:—"Reconnaissances! I will have none of them. They are of no use except for timid people and to let the enemy know that you are coming. You can always find the enemy if you want to. Columns of attack, the bayonet, the sabre, and charge home; that is the reconnaissance for me!"

The French detached one Division to the south of the Po under MONTRICHARD, who later on, as we shall see, joined their army from southern Italy. The remainder, which fell short of 30,000, in five Divisions, retreated across the Oglio to the Adda, where Scherer broken down in health was replaced in the command by MOREAU.

The line of the ADDA was forced at the end of April and at LECCO occurred the first conflict betwixt French and Russians. MOREAU conducted with considerable skill his retreat before the greatly superior forces of the Allies, but by the end of May he had been driven into the Alps and Apennines, having left garrisons in ALESSANDRIA, TORTONA, and the citadel of TURIN. One of the combats took place at MARENGO, when the respective positions of the Austrians and French were the reverse of what they were to be in the great battle of the following year.

The Allies occupied MILAN on April 29th and TURIN on May 27th and were now masters of all North Italy on both sides of the Po except the trans-Apennine province of LIGURIA. Other allied

forces were operating north of the Alps in Switzerland.

Meanwhile the French Government had ordered their "Army of NAPLES" under command of General MACDONALD to come up in support of MOREAU. MACDONALD set out from NAPLES on May 7th and by the end of the month had gathered 30,000 men in Tuscany. This small army was divided into an advanced guard and five weak Divisions including that of MONTRICHARD above mentioned.

At this time Moreau's "Army of Italy" was at Genoa and on the Riviera east and west of that place, with advanced posts on the crests of the mountains, and small garrisons blockaded in Alessandria, Tortona and the citadel of Turin. It was about 20,000 strong in four Divisions. One Division, that of Serrurier had been

surrounded and forced to capitulate on the ADDA.

In these circumstances it would seem the soundest course for the two armies to join up and 50,000 strong make a united move across the Apennines The road along the coast however was not practicable for artillery, and the troops could not be moved by sea because the English fleet held the Mediterranean and was even now threatening Leghorn. The two French Generals therefore arranged to move separately across the mountains and to effect their junction beyond them. Moreau's right Division, that of Victor, from Sestri Levante, was to co-operate with Macdonald, forming his left wing.

This plan had the disadvantage of exposing each army to the danger of being defeated in detail. Macdonald was to move first and, after crossing the Apennines from Tuscany, swing to the left and advance in a north-westerly direction along the Great Trunk road of the country, the ancient VIA ÆMILIA, parallel to the present railway along which the Indian mails are carried between BRINDISI and TURIN. The junction was to be effected about TORTONA: this involved for Macdonald the passage of the defile of STRADELLA. The Appennines here approach close to the Po, and it is this that gives such military importance to the TREBBIA region and the position of PIACENZA which here commands the passage of the river. It was in this region that the great battle of the campaign was destined to be fought.

One wonders what would have happened if Bonaparte had been now in command of the French. Would he have found the way to move his artillery in spite of the roads? Or, perhaps he would have left that of the weaker force behind at Genoa, carried the troops without guns to Tuscany, and by a rapid move over the Appennines and over the Po placed his army athwart the enemy's communications; raised the blockade of Mantua, and, having obtained fresh guns from that Arsenal, proceeded to defeat in

detail the scattered forces of the Russo-Austrians.

The allied army in Italy exceeded one hundred thousand: there were ten Austrian Divisions besides these Russian. One of

the former was blockading Mantua, and the field forces extended over North Italy west and south to the mountains. Three weak Divisions were south of the Po and were the only troops at hand to withstand the first onset of the "Army of Naples." The Main Body under Suvorov, nearly 30,000, was at Turin where the French still held the citadel. Two Divisions lay to the south and one to the north of Turin watching the passes of the Alps, and one recently arrived from Switzerland was near Pavia on its way to undertake the sieges of Tortona and Alessandria which were as yet only blockaded.

The movement of the French began on June 9th and was carried out as projected. Two weak Austrian Divisions were driven off northward, and the French having occupied successively BOLOGNA, MODENA, REGGIO and PARMA arrived on the 16th on the TREBBIA. One Austrian Division—OTT—6,000 strong retreated before them, and having left a garrison in the citadel of PIACENZA fell back behind the TIDONE.

SUVOROV, on hearing of the French advance, left one Division at TURIN, and on June 15th concentrated 45,000 men near Alessandria and Tortona in a central position from which he could operate against either French army. On being further informed of the approach of Macdonald he allotted to Bellegrade, lately come from Switzerland with 15,000 men, the task of watching the two fortified places and of holding Moreau in check, and with the remainder moved on the 16th to Casteggio, the advanced guard to Stradella. Now followed the four days' fighting on or near the river Trebbia.

#### FIRST DAY.

On June 17th the leading French Division, which was that of VICTOR, crossed the TIDONE and attacked the Austrians under OTT. VICTOR was followed immediately by the advanced guard who came up on his right, Rusca's Division in the centre, and Dombrovski's on the left. The last were Poles who now renewed in the valley of the Po their recent struggle with the Russians on the VISTULA. The French now had 18,000 men in line and extended from the Po to MOTTAZIANA. Before this force OTT had to fall back until reinforced by Suvorov's advanced guard from STRADELLA when he was able to rally. Later on Suvorov came up, and making his chief effort on the flank further from the river Po drove back Dombrovski across the Tidone. This success nullified that which the French had gained on the opposite flank near the river. Off retook the village of SARMATO. The whole French line was forced to retire and halted for the night on the further bank of the TREBBIA. WATRIN'S Division came up and was told off to watch the Austrians in Placenza. The two remaining French Divisions, those of Olivier and MONTRICHARD, which had been left in the neighbourhood of MODENA to observe the enemy to the north, were this night on a good march east of PIACENZA. The Allies remained on the left bank of the TIDONE.



#### SECOND DAY.

During the night of the 17th-18th the gross of the Allied army came up and Suvorov had now 30,000 men. He determined to His plan was to hold back his centre and left and to attack vigorously with his right. When we remember that the Austrians had a garrison in the citadel of PIACENZA we see that such a plan was likely to lead to the destruction of the French army. Russians formed the right half of the allied host, the Austrians the The right under ROSENBERG was to cross the TIDONE at BRENO and make for RIVALTA on the TREBBIA and S. GIORGIO on the NURE. A detachment had already been sent more to the right into the hills to oppose one of MOREAU'S Divisions which had reached BOBBIO on the 16th. The centre under MELAS, keeping further back, was to move by MOTTAZIANA on GRAGNANO. The left under OTT was to hold the high road. A bridge of boats was thrown over the Po above PIACENZA to facilitate the junction of a Division expected from MANTUA, and to offer an alternative line of retreat in event of that through TORTONA being lost.

The right, accompanied by the Commander-in-Chief, met a determined resistance between Casaliggio and Rivalta, and it was only at nightfall that the Poles and French were driven across the Trebbia. In the centre the Divisions of Olivier and Montrichard arrived on the field about 2 p.m. in time to check the advance of the allied centre at Gragnano, but they also had to recross the Trebbia at night. Ott on the left likewise forced the enemy to recross the river.

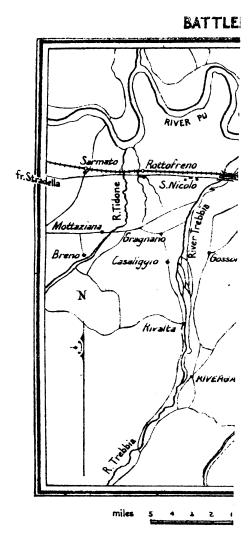
The French thus held the same positions as the night before, while the Allies had come up to the TREBBIA, and this stream now divided the two armies. During the night an alarm occurred. The bed of the TREBBIA is broad and the water was at this season shallow. The infantry and cavalry engaged in a moonlight mêlee from nine to eleven o'clock in the riverbed, fired on by the artillery of both sides. Neither army gained anything by this unhappy conflict which must have added considerably to the losses of both.

## THIRD DAY.

It was the intention of SUVOROV to continue his attack this day, the 19th, on the same lines as on the two former days, and he ordered the Austrian Reserve to the right.

He was however forestalled by the offensive of the French. Both armies had now their full strength at hand, some 36,000 on each side, without making allowance for the casualties of the 17th and 18th. Macdonald was counting on the arrival of Moreau's Main Body on the rear of the Allies and of the Division Lapoype on their right flank. He attacked all along the line endeavouring to turn both flanks of an army equal in number to his own.

The left—Dombrovski—was so far successful as to obtain possession of Rivalta, but the Poles were afterwards repulsed across the Trebbia. The French left centre—Victor and Rusca—penetrated



as far as CASALIGGIO, but being assailed in flank by the Russian right were obliged to recross the river. The right centre—OLIVIER and MONTRICHARD—also succeeded in crossing the TREBBIA. MELAS was loath to send his reserve as ordered to the right, and was late in doing so, with the result that they came upon these two French Divisions, and drove them back. After this MELAS recalled his reserve to the left. Here the French right Division—WATRIN—had found only weak forces to oppose it and had advanced as far as the TIDONE, but being now assailed by the Austrian Reserve it had to abandon all it had won and rejoin the remainder of the army behind the TREBBIA.

Night put an end to the battle.

On this day the French attacked in two lines, covered by skirmishers, with cavalry in the intervals. They failed to bring a superiority of force on any one point; on the other hand, the Russian general's sounder plan was spoilt by want of co-operation on the part of his ally.

The issue of the struggle was yet undecided, and the two armies still stood face to face across the TREBBIA. The losses during these three days had been heavy, and are variously estimated from 12,000 in all to 12,000 on each side, which latter would amount to one-third

of the total engaged.

Nothing had been heard of MOREAU or LAPOYPE; ammunition was running short; lastly the two Austrian Divisions which had retired northward had now retraced their steps and had occupied MODENA, REGGIO and PARMA in rear of the French army. In these circumstances MACDONALD judged it prudent to fall back during the night behind the NURE. The three left Divisions accordingly retired to S. GIORGIO, two centre Divisions to PONTENURE, and the right to RONCAGLIA.

#### FOURTH DAY.

The Russians moved as early as 4 A.M. as June 20th and vigorously attacked the French left, which was after a brave struggle driven back, and most of it took refuge in the mountains.

The Austrians entered PIACENZA where they took 5,000 wounded

prisoners including Generals OLIVIER and RUSCA.

The French held on at PONTENURE until the retreat of their left

necessitated a withdrawal here, as well as on the right.

The Division of LAPOYPE came down near S. Giorgio on this day, but not until the French had been driven out. It then regained the coast by mountain paths, the road through Bobbio having been seized by the Russians. Thus ended the four day's fight of the Trebbia.

The French army retreated on MODENA driving before them the weak Austrian Divisions of HOHENZOLLERN and KLENAU, and then withdrew across the Appennines leaving the Division of MONTRICHARD east of the mountains at BOLOGNA. They were followed by only the single Austrian Division of OTT. SUVOROV and

his Russians turned back to face MOREAU who had meanwhile

appeared in their rear.

This General after receiving some reinforcements and detaching as already noted, Victor and Lapoype, had not more than 20,000 men collected at Genoa with whom he crossed the Apennines on June 16th. He was still in the neighbourhood of Novi while MacDonald was engaged on the Trebbia. Leaving one Division to hold the passes, he descended into the plains with about 14,000 and on June 20th he defeated Bellegards on the future battlefield of Marengo with a loss of 1,000 killed and wounded, 1,500 prisoners and five guns.

He was about to move on VOGHERA and PIACENZA when news reached him of the defeat of MACDONALD on the TREBBIA and of the fall of the citadel of TURIN. He accordingly stood fast on the plain

of MARENGO.

On June 25th the Russian army arrived having marched nearly sixty miles in three days. On their approach MOREAU retreated to GENOA, to the neighbourhood of which the "Army of NAPLES" also repaired during the month of July in a shattered and

disorganised state.

In this campaign Suvorov displayed considerable vigour and ability. He left the siege of the citadel of Turin to a subordinate; concentrated a considerable force rapidly in a central position; moved at once against that one of the enemy's two armies that was the first to show itself; attacked persistently the flank away from the river, and after his victory turned quickly against the other army which only saved itself by a hasty retreat.

He furthermore ordered KRAY to leave only one-third of his corps before MANTUA and to bring the rest to join the main army

near PIACENZA.

In all this we are reminded of Bonaparte's conduct on the MINCIO in 1796. The Austrian Government on the other hand had withdrawn Kray from the command of Suvorov until he should have captured Mantua, thus thwarting the plans of the Commander-in-Chief, and exemplifying the evil attraction so often exercised by fortresses on inferior strategists.

On the French side an explanation is wanting of the delay of MACDONALD in crossing the Apennines, and of MOREAU in descending from Novi after he had crossed. The great lesson however is the difficulty and risk attending any attempt to effect a junction between two armies on ground already in possession of the enemy.

If the question were put, when and between whom occurred the battle of the Trebbia, most people would answer that it was fought between the Romans and the Carthaginians in the Second Punic war.

That this battle which took place more than two thousand years ago should still be remembered in preference to one in almost our own times is evidence of the paramount importance recognised as belonging to that great struggle between Rome and Carthage, the struggle for the mastery of the Western world between the two great divisions of the White Race, the Aryan and the Semitic, a

struggle again renewed nine centuries later by the Arabs.

The commanding military genius of Hannibal is now universally acknowledged; his march from Spain to attack the Romans in Italy will ever stand out as one of the most remarkable military movements of any age. Its principal details are subjects of dispute to the present day; the point where he crossed the Rhone, his route east of that river, the pass by which he crossed the Alps and where he debouched into Italy, the site of his first encounter with the Romans, and lastly the relative position of the two combatants on the Trebbia, are all matters of controversy.

His passage of the Alps has been the subject of several articles in recent years in the military magazines of Italy. Other passes have been brought into question, but in the main the dispute lies between the Mont Genevre and the Little St. Bernard. By the former he would have debouched on Turin, by the latter he would have entered Italy by the valley of the Dora Baltea, the way by which Napoleon came in 1800, for the roads from the Great

and Little St. Bernard meet at right angles at Aosta.

The Trebbia was the first pitched battle of this campaign. The first encounter was an advanced guard action near the river Ticino, the exact site of which cannot be identified. It occurred in the month of December B.C. 218 to the west of the river, and in it the Carthaginian cavalry established their superiority over the Roman. The Roman commander Publius Cornelius Scipio was himself severely wounded. He retreated across the Ticino, recrossed the Po at Piacenza, which was a Roman Colony, and where he had a bridge of boats, and encamped near that town, on the left bank of the Trebbia, probably about the present village of S. Nicolo. It is likely that there was here a bridge over the Trebbia.

HANNIBAL crossed the Po higher up, and marching down the right bank pitched his camp, six miles from PIACENZA according to LIVY, fifty stadia from SCIPIO'S camp according to POLYBIUS. Reckoning eight stadia to a mile, "six miles" may be taken as the nearest equivalent in Roman measure to "fifty stadia," and it is quite likely that when LIVY wrote "from PIACENZA" he meant "from SCIPIO'S camp," which was near enough to the place to be considered as being at PIACENZA. In this case HANNIBAL'S camp was west of the TIDONE and near the present village of SARMATO, which is just about ten kilometres or fifty stadia from S. NICOLO.

The day after his arrival here he drew out his army in battle array, but SCIPIO declined the challenge. He was expecting to be reinforced by the other Consul TITUS SEMPRONIUS who had been ordered by the Roman Government to move up from SICILY to his support.

The following night the Gauls in the Roman camp to the number of over two thousand revolted and went over to the Carthaginians. Scipio, feeling insecure where he was, crossed the

TREBBIA and established a new camp on the right bank higher up and entrenched it. This was probably above Gossolengo, which would correspond with Livy's description "in localitora collesque impeditiores equiti." The Romans had learnt their inferiority in the cavalry arm.

HANNIBAL sent his cavalry to harass the Romans in their move, but the NUMIDIANS made for the abandoned camp in hope of plunder, and so the Romans crossed the river unmolested and lost only a few stragglers. HANNIBAL then also moved his camp, and pitched it at a distance of forty stadia from that of SCIPIO. This may have been between MOTTAZIANA and GRAGNANO. The two armies continued thus for some time, divided by the TREBBIA.

Scipio was here joined by SEMPRONIOUS who landed at RIMINI and marched thence by the same road as Macdonald did in 1799, and which later became known as the VIA ÆMILIA. SCIPIO who was still suffering from his wounds was not desirous of another battle. SEMPRONIUS on the other hand was eager for the fray and seems to have virtually commanded both armies. He hoped to have somewhat restored the moral of the troops by sundry engagements of cavalry on the other side of the TREBBIA, engagements in which the enemy having suffered the greater loss might be considered as successes.

In the meanwhile HANNIBAL had obtained possession of CLASTI-DIUM, that is CASTEGGIO, in rear of his army, where the Romans had amassed large supplies, and which, says LIVY, he used as a granary.

The united Roman armies amounted to 40,000. Hannibal had descended from the Alps with 20,000 foot and 6,000 horse: some think however that he had enlisted Gaulish auxiliaries in Italy sufficient to make his forces about equal to those of the Romans. Hannibal by a personal reconnaissance found a suitable spot for an ambuscade, and he placed there 2,000 men, horse and foot, under his brother Mago. Livy describes this as a place with a stream, long grass or rushes, and thorny thickets; it was probably among the ravines near Rivalta.

He then in the early morning sent his Numidian cavalry across the Trebbia to draw the Romans from their camp, with orders to fall back fighting and to try to entice the enemy to cross the river, on the left side of which he drew up his army ready to receive their attack. This stratagem succeeded. The Romans disturbed in their rest issued from camp on empty stomachs, waded through the cold waters of the Trebbia swollen to breast height by rain during the night, and attacked the Carthaginians who had had their breakfasts, had fires outside their tents to warm themselves by, and had oiled their bodies.

The army of Sempronius formed the right, that of Scipio the left of the array. The Romans were in their regular triple line formation with cavalry on the flanks. The Carthaginians were set up in two lines, horse and elephants on the flanks. The light troops and slingers formed the first line 8,000 strong. These when attacked

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the former was blockading Mantua, and the field forces extended over North Italy west and south to the mountains. Three weak Divisions were south of the Po and were the only troops at hand to withstand the first onset of the "Army of Naples." The Main Body under Suvorov, nearly 30,000, was at Turin where the French still held the citadel. Two Divisions lay to the south and one to the north of Turin watching the passes of the Alps, and one recently arrived from Switzerland was near Pavia on its way to undertake the sieges of Tortona and Alessandria which were as yet only blockaded.

The movement of the French began on June 9th and was carried out as projected. Two weak Austrian Divisions were driven off northward, and the French having occupied successively BOLOGNA, MODENA, REGGIO and PARMA arrived on the 16th on the TREBBIA. One Austrian Division—OTT—6,000 strong retreated before them, and having left a garrison in the citadel of PIACENZA fell back behind the TIDONE.

SUVOROV, on hearing of the French advance, left one Division at TURIN, and on June 15th concentrated 45,000 men near Alessandria and Tortona in a central position from which he could operate against either French army. On being further informed of the approach of Macdonald he allotted to Bellegrade, lately come from Switzerland with 15,000 men, the task of watching the two fortified places and of holding Moreau in check, and with the remainder moved on the 16th to Casteggio, the advanced guard to Stradella. Now followed the four days' fighting on or near the river Trebbia.

#### FIRST DAY.

On June 17th the leading French Division, which was that of VICTOR, crossed the TIDONE and attacked the Austrians under OTT. VICTOR was followed immediately by the advanced guard who came up on his right, Rusca's Division in the centre, and Dombrovski's on the left. The last were Poles who now renewed in the valley of the Po their recent struggle with the Russians on the VISTULA. The French now had 18,000 men in line and extended from the Po to MOTTAZIANA. Before this force OTT had to fall back until reinforced by Suvorov's advanced guard from Stradella when he was able to rally. Later on Suvorov came up, and making his chief effort on the flank further from the river Po drove back Dombrovski across the Tidone. This success nullified that which the French had gained on the opposite flank near the river. Off retook the village of SARMATO. The whole French line was forced to retire and halted for the night on the further bank of the TREBBIA. WATRIN'S Division came up and was told off to watch the Austrians in Placenza. The two remaining French Divisions, those of OLIVIER and MONTRICHARD, which had been left in the neighbourhood of Modena to observe the enemy to the north, were this night on a good march east of Placenza. The Allies remained on the left bank of the THONE.



### Second Day

During the night of the 17th = 18th the gross of the Allied army came up and Stvorov had now 30 000 men. He determined to attack. His plan was to hold back his centre and left and to attack vigorously with his right. When we remember that the Austrians had a garrison in the citadel of Piacenza we see that such a plan was likely to lead to the destruction of the French army. Russians formed the right half of the all ed host, the Austrians the left. The right under ROSENBERG was to cross the TIDONE at BRENO and make for RIVALTA on the TREBBLA and S. GIORGIO on the NURE A detachment had already been sent more to the right into the hills to oppose one of Moreau's Divisions which had reached Bounto on the loth The centre under MELAS, keeping further back, was to move by MOTTAZIANA on GRAGNANO. The left under OTT was to hold the high road. A bridge of boats was thrown over the Po above Placesza to facilitate the junction of a Division expected from MANTUA, and to offer an alternative line of retreat in event of that through TORTONA being lost

The right, accompanied by the Commander in Chief, met a determined resistance between Casalicoto and Rivalta, and it was only at nightfull that the Poles and French were driven across the Treinia. In the centre the Divisions of Olivier and Monthienario arrived on the field about 2 PM in time to che k the advance of the allied centre at Graconano, but they also had to recross the Treinia at high. Off on the left likewise forced the enemy to recross the river

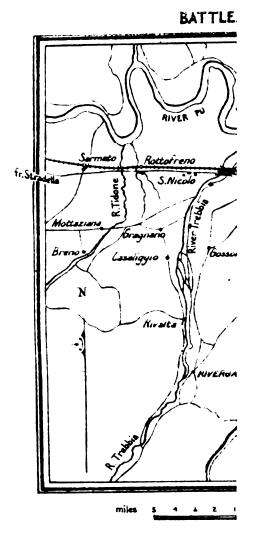
The French thus held the same positions as the night before while the Acres had come up to the Thermax, and this stream now divided the two armies. During the night an acrim occurred. The bed of the Thermax is broad and the water was at this season shallow. The infantity and cavalry engaged in a mosninght not of from nine to eleven oclock in the reserbed fixed on by the art, cryof both sides. Neither army gained anything by this integrity conflict which must have added considerably to the Lisses of both.

#### THEO. DAY

It was the intention of Sevenov to continue his attack this day, the 19th on the same ones is on the two former days, and he ordered the Austrian Reserve to the right.

He was however the still depths of the sixe of the French. Both armost had now their the strength of hand, some or there on each side, without nowing an wante for the executios of the 17th and 18th. Machines at how we do noting on the arrival of Monkey's Main Body on the rear of the Alexandria of the Divis in Labour on their right flank. He attacks have a right correspond to turn both flanks of an army equal in notice of the sown.

The left = 1808 (NOSK) = was setar was setal as to elect up so we said of Rivalta but the Poles were atterwards repulsed a ross the Theoria. The French of the entre = Victor and Re  $\sim$  a = penetrated



as far as Casaliggio, but being assailed in flank by the Russian right were obliged to recross the river. The right centre—Olivier and Montrichard—also succeeded in crossing the Trebbia. Melas was loath to send his reserve as ordered to the right, and was late in doing so, with the result that they came upon these two French Divisions, and drove them back. After this Melas recalled his reserve to the left. Here the French right Division—Watrin—had found only weak forces to oppose it and had advanced as far as the Tidone, but being now assailed by the Austrian Reserve it had to abandon all it had won and rejoin the remainder of the army behind the Trebbia.

Night put an end to the battle.

On this day the French attacked in two lines, covered by skirmishers, with cavalry in the intervals. They failed to bring a superiority of force on any one point; on the other hand, the Russian general's sounder plan was spoilt by want of co-operation on the part of his ally.

The issue of the struggle was yet undecided, and the two armies still stood face to face across the TREBHA. The losses during these three days had been heavy, and are variously estimated from 12,000 in all to 12,000 on each side, which latter would amount to one-third

of the total engaged.

Nothing had been heard of MOREAU or LAPOYPE; ammunition was running short; lastly the two Austrian Divisions which had retired northward had now retraced their steps and had occupied MODENA, REGGIO and PARMA in rear of the French army. In these circumstances MACDONALD judged it prudent to fall back during the night behind the NURE. The three left Divisions accordingly retired to S. GIORGIO, two centre Divisions to PONTENURE, and the right to RONCAGLIA.

## FOURTH DAY.

The Russians moved as early as 4 A.M. as June 20th and vigorously attacked the French left, which was after a brave struggle driven back, and most of it took refuge in the mountains.

The Austrians entered PIACENZA where they took 5,000 wounded

prisoners including Generals OLIVIER and RUSCA.

The French held on at PONTENURE until the retreat of their left

necessitated a withdrawal here, as well as on the right.

The Division of LAPOYPE came down near S. Giorgio on this day, but not until the French had been driven out. It then regained the coast by mountain paths, the road through Bobbio having been seized by the Russians. Thus ended the four day's fight of the TREBBIA.

The French army retreated on Modena driving before them the weak Austrian Divisions of Hohenzollern and Klenau, and then withdrew across the Appennines leaving the Division of Montrichard east of the mountains at Bologna. They were followed by only the single Austrian Division of Ott. Suvorov and



his Russeans turned back to tace MOREAU who had meanwhile

appeared in their rear

This General after receiving some reinforcements and detaching as already noted. Victor and Laisover, had not more than 200000 men collected at GENOV with whom he crossed the Apennines on June 16th. He was still in the neighbourhood of Novi while Machonald was energed on the Treffield. Leaving one Division to hald the passes, he descended into the plains with about 14,000 and on June 20th he detected Bellicoverbe on the future battlefield of Markenov with a loss of 1,000 killed and wounded, 1,500 prisoners and five guins.

He was about to move on. VOOHERY and PIYENZA when news reached him of the defeat of MYCDONALD on the TREEBIY and of the fall of the ciradel of TURIN. He accordingly stood fist on the plain of MARENGO.

On June 25th the Russian army arrived having marched nearly sixty miles in three days. On their approach Monratterreated to Genov to the neighbourhood of which the "Army of Narles" also repaired during the month of July in a shartered and disorgainsed state.

In this campaign St vokov displaced considerable vigour and ability. He left the siege of the citable of TURIX to a subsiderate, concentrated a considerable force rapeds, in a central position, moved at one against that one of the enemys two armies that was the first to show uself, attucked persistently the flank away from the riser, and after his victory turned quickly against the other army which only seed itself by a histy retreat

He furbermore ordered KRAY to leave only one thad of his corps before MANTEA and to bring the rist to pain the main army near Property.

In match a we are remarded of Boroparts a conduction the Mixero in 1706. The Austr and Government on the other hand had with leaven Khay transition command of Savinov net also be additive explained Maxima transitional registerpoles of the Command restricted at Lexings transition evaluation to no off in exercised by fortiesses on interior strategists.

On the Free has to an exposed massearing of the delivered Marian National research Aparentes and of Monach and so of the first New Monach the factor so to The great case in however is the different value of the contract of

If the question were put when and both ends we have given the District of the Arms of the

I have been a few or with the experience of the rest of the second vertical and the rest of the rest o

the struggle for the mastery of the Western world between the two great divisions of the White Race, the Aryan and the Semitic, a struggle again renewed nine centuries later by the Arabs.

The commanding military genius of Hannibal is now universally acknowledged; his march from Spain to attack the Romans in Italy will ever stand out as one of the most remarkable military movements of any age. Its principal details are subjects of dispute to the present day; the point where he crossed the Rhone, his route east of that river, the pass by which he crossed the Alps and where he debouched into Italy, the site of his first encounter with the Romans, and lastly the relative position of the two combatants on

the TREBBIA, are all matters of controversy.

His passage of the Alps has been the subject of several articles in recent years in the military magazines of Italy. Other passes have been brought into question, but in the main the dispute lies between the Mont Genevre and the Little St. Bernard. By the former he would have debouched on Turin, by the latter he would have entered Italy by the valley of the Dora Baltea, the way by which Napoleon came in 1800, for the roads from the Great and Little St. Bernard meet at right angles at Aosta.

The Trebbia was the first pitched battle of this campaign. The first encounter was an advanced guard action near the river Ticino, the exact site of which cannot be identified. It occurred in the month of December B.C. 218 to the west of the river, and in it the Carthaginian cavalry established their superiority over the Roman. The Roman commander Publius Cornelius Scipio was himself severely wounded. He retreated across the Ticino, recrossed the Po at Piacenza, which was a Roman Colony, and where he had a bridge of boats, and encamped near that town, on the left bank of the Trebbia, probably about the present village of S. Nicolo. It is likely that there was here a bridge over the Trebbia.

HANNIBAL crossed the Po higher up, and marching down the right bank pitched his camp, six miles from Piacenza according to Livy, fifty stadia from Scipio's camp according to Polybius. Reckoning eight studia to a faile, "six miles" may be taken as the nearest equivalent in Roman measure to "fifty stadia," and it is quite likely that when Livy wrote "from Piacenza" he meant "from Scipio's camp," which was near enough to the place to be considered as being at Piacenza. In this case Hannibal's camp was west of the Tidone and near the present village of Sarmato, which is just about ten kilometres or fifty stadia from S. Nicolo.

The day after his arrival here he drew out his army in battle array but Scipio declined the challenge. He was expecting to be reinforced by the other Consul Titus Sempronius who had been ordered by the Roman Government to move up from Sicily to his support.

The following night the Gauls in the Roman camp to the number of over two thousand revolted and went over to the Carthaginians. Scipio, feeling insecure where he was, crossed the

TREBUILA and established a new camp on the right bank higher up and entrenched it. This was probably above Gossolendo, which would correspond with LIVY'S description "in localitiona collesque import ones equition." The Romans had learnt their inferiority in the cavalry arm.

HANNIBAL sent his cavalry to harass the Romans in their move but the NUMIDIANS made for the aban loned camp in hope of plunder, and so the Romans crossed the river unmolested and lost only a tow strugglers. HANNIBAL then also moved his camp, and pitched it at a distance of forty stadia from that of Scieto. This may have been between MOTIAZIANA and GRAGNANO. The two armies continued thus for some time, divided by the TREBERA

Scipio was here joined by Sempionious who landed at RIMINI and no ched thence by the same road as Machonard did in 1799, and which later became known as the VIA EMILIA. Scipio who was still softening from his wounds was not desirous of another battle. Seminonius on the other hand was eager for the tray and seems to have virtually commanded both armies. He hoped to have somewhat a stored the moral of the troops by sundry engagements of cavalry on the other side of the Termia, engagements in which the enemy having suffered the greater loss might be considered as 8000 2003.

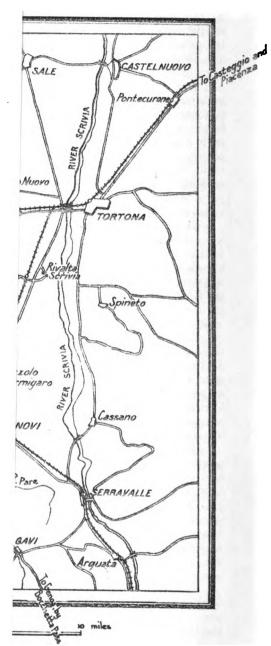
In the meanwhile HANNIIA, had obtained possession of CLASTI-DILM to at is CASTI-OLDO in rear of his army, where the Romans had amassed large supplies, and which says LIVY, he used as a granary

The united Roman armies amounted to 40,000. HANNIGAL had discinded from the Alps with 20,000 fisht and 6,000 horse, some think however that he had enlisted Gam ish arxing enes in Italy sufficient to make his forces about equal to those of the Romans. HANNIGAL by a personal recontracescape found a suitable spot for an ambuscule and he placed there 2,000 ment horse and find under his brother Mago. Livy discribes this is a place with a stream long grass or rishes, and thorny the kets. It was probably among the rayings near Revalua

He then in the early in riving sont his Naminian earlier across the Thatleta to drew the Robins in the robusts with orders to facilities highly good to try to enter the every to cross the river on the left side of whe had drew up his array routy to reserve their attack. This stratege is so could The Robins distribution their rest issued from any incoming stand his world through the continuous section to Tennia, swell at the world through the region of the Tennia, swell at the strategy in the strategy of the random grade had treated at the Corresponding to a cost of all the robusts had the source to the rotation that the strategy and the robusts had the source to the rotation of the robusts.

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by the Roman legions opened out to either flank and joined the cavalry and elephantry in assaulting the Roman wings. Mago's troops issued from their hiding place and fell upon the Roman rear. The Romans, wet, cold and hungry, were overborne: their few Gallic auxiliaries on the right flank were the first to give way.

SEMPRONIUS' army fell back on PIACENZA. Some were drowned in efforts to cross the TREBBIA, others perished or were taken prisoners on its bank, a few only succeeded in crossing the river and regaining the camp. A certain number of SCIPIO's army maintained their position on the left bank. A storm of sleet put an end to the battle. Many of the elephants perished from cold. During the night SCIPIO succeeded in getting over the river in boats and rejoined his colleague at PIACENZA. LIVY states that the TREBBIA put a stop to the Carthaginian pursuit and that their soldiers were exhausted by the cold: this accounts for the night escape of SCIPIO.

It appears that the bridge over the TREBBIA on the high road was still standing, and that the right of the Romans retired across it, for Livy states that some reached Piacenza "recto itinere" while others were stopped by the river. After the battle, this bridge if not destroyed by the Romans would have remained in the hands of the Carthaginians, and Scipio's night passage was probably effected higher up near the Roman camp with the help of the camp guard which had been left behind to hold it.

LIVY'S statement that the Carthaginians had fires "in front of their tents," Mago's attack on the Roman rear, Sempronius' retreat on Piacenza by the straight way, and Scipio's being able to maintain himself beyond the river, all go to show that the battle was fought some distance west of the Trebbia. Polybius states that the Carthaginian line of battle was formed eight stadia in front of their camp. It would be represented by a line drawn north and south just east of Rottofreno and west of Gragnano.

HANNIBAL'S victory was in great part due to a flank attack, carried out by means of an ambuscade, and is perhaps the first authentic example of this manœuvre. This attack, like that of Suvorov in 1799, was directed on the flank further from the river Po. The Carthaginians stood in the position of the Russo-Austrians, the Romans in that of the French. One great difference however was that in B. C. 218 the Romans were in possession of PIACENZA with the passage over the Po, whereas in 1799 this was held by the Austrians so that the French could retreat only to the southeast.

It was noticed above that the position of the two opposed armies in this battle is one of the points of controversy. Many persons are of opinion that their relative position was reversed; that the Romans faced east and the Carthaginians west; that HANNIBAL camped six miles not north-west but south-east of PIACENZA; that SCIPIO camped just outside the town, then removed to the left bank of the TREBBIA where he was joined by SEMPRONIUS and recrossed to the right bank to fight

As all agree that the Romans fought back to the river, the battle must in this case have taken place on the east side of the TREBBIA, and MAGO'S ambuscade must have been near where I have supposed the second Roman camp to have stood, a position which does not so well accord with LIVY'S description above quoted. In this case the following points call for attention:—

(1) That HANNIBAL must have marched past Scipio's army

encamped under the walls of PIACENZA.

(2) That SEMPRONIUS must have slipped by HANNIBAL to effect his junction with SCIPIO.

(3) That HANNIBAL got possession of CLASTIDIUM and used it

as a granary while Scipio's army lay between him and it.

(4) That HANNIBAL drew up his army so that its right was open to attack from PIACENZA which was held by the enemy.

(5) That the Roman army when defeated retreated not to its

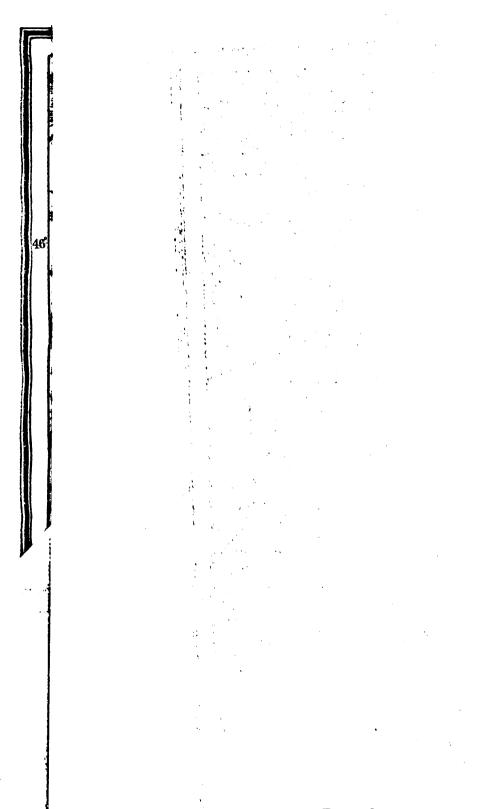
own but to its enemy's rear.

The first of these conditions is quite possible, because SCIPIO was not wishful for an action, and the Gaulish inhabitants being hostile to the Romans, HANNIBAL could obtain supplies anywhere and was not dependent on communications. One writer who takes this view, Colonel Macdougall, at one time Commandant of the Staff College, states frankly of the second of these points that it is "impossible to explain," and of the last that it is "difficult to understand." Polybius indeed states that some of the Roman army broke through the Carthaginian line, and later on "continued their march" to Piacenza; but, in the same sentence he mentions the Trebbia along with the Carthaginian cavalry as obstacles to their "return" whence it would appear that their march was "continued" in a return direction.

It is probable that he here refers to that portion of the Roman army which under SCIPIO remained at the close of the day on the left bank. When attacked by Mago in rear it may have pushed on and succeeded in its own frontal attack; then, finding the rest of the army routed and the plain covered by the Carthaginian cavalry, it became necessary to return. "Continued their march to Piacenza" seems to be Polybius' brief account of the night passage across the Trebbia of Scipio's detachment, more fully described by Livy. The latter historian is commonly credited with copying freely from the former, but it is likely that, in any case with regard to the Romans, he had access to documents or traditions unknown to Polybius. From the accounts of both it seems certain that the battle was fought west of the Trebbia.

One matter which calls for explanation is—why Hannibal allowed the two Roman armies to effect their junction; why he did not attack Scipio before Sempronius arrived. In this respect the strategy of the Russian General in A.D. 1799 seems superior to that of the Carthaginian in B.C. 218. It is is however to be remembered that to Hannibal, with a small army far from home and from any possible reinforcement from there, among a people





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likely to take the winning side, prestige was of paramount importance. He may have felt confident of victory in any case, and may have opined that a defeat of both Consular armies on one field would add more to his prestige than to defeat each separately. Viewed from this point his conduct, although risky, may be looked upon as

magnificent audacity. It was justified by the result.

There is yet a third "battle of the TREBBIA" to be noticed. It happened during the war of Austrian Succession. It was fought not actually on the TREBBIA but little east of PIACENZA. The Austrians near the villages of S. LAZZARO and S. S. BONICO were attacked by the French and Spanish on the 6th of June 1746. This battle was of an indecisive character and is of very slight interest in comparison with the two already dealt with.

These repeated battles on the same terrain are good evidence of the military importance of this region. Here have Romans Carthaginians, Africans, Spanish, Austrians, French, Poles and Rus-

sians contended for the dominion of Italy.

## THE SIEGE OF PORT ARTHUR.

### A Lecture delivered at Simla on the 26th August 1908.\*

By Major H. F. Thuillier, R.E.

From the military point of view, the siege of Port Arthur is by far the most important that has taken place since that of Schastopol, just 50 years earlier. It is the only example we have of the behavour, under modern conditions of war, of a fortress defended by works of recent construction and armed with modern ordnance. Also from the point of view of the operations of the besiegers this siege affords to the soldier a large proportion of interest and instruction.

Between the times of Sebastopol and Port Arthur, many sieges have taken place in all parts of the world, but with a few exceptions of little military importance, they all took the forms of simple investment or blockade, accompanied by bombardment. This method of attempting the reduction of a fortified place is extremely slow and uncertain in its results, but it entails comparatively little loss to the besiegers. The method of regular formal siege, as employed at Sebastopol, and also, as will shortly be described, at Port Arthur, is a very different affair, requiring a far larger measure of science and determination on the part of the besiegers, but leading inevitably, unless relief from exterior forces arrives, to ultimate success.

In old days, when sieges were more common than now, the science of siege warfare attained to great precision and a highly developed organization. Of late years, however, it has not received so much study as it requires. We should nevertheless remember that in the Crimea for a whole year the entire British Army was employed in this form of warfare, and it cannot be said that we are certain not to be engaged in it again. The need for scientific organization and precision is as great or greater than ever, and it is of the first importance for us to learn to what extent the practice of siege warfare has been affected by the remarkable improvements in warlike weapons which the present generation has witnessed. The operations at Port Arthur are bound to afford us valuable and much needed lessons in this respect. So many in fact are the

<sup>\*</sup>It is regretted that it has not been possible to amend the names on the accompanying map to agree with the spelling given in the "British Officers' Reports of the Russo-Japanese War" recently published by the General Staff, W.O., which will doubtless form the standard for Manchurian names in future. As the map could not be altered it has been considered undesirable to alter the spelling of the names in the letter press, as this might lead to difficulties in identifying the names of the places on the map. The standard spelling is however given in footnotes.



lessons which a study of the siege brings to light that it is not possible within the limits of a lecture to touch on more than a few of the more important.

Before proceeding to a narrative of the operations themselves, we must refer for a moment to the strategic bearing

Strategic value of Port Arthur to both combatants.

of the defence and siege of Port Arthur upon the course of the campaign. It is necessary

to do this as strategic considerations to a certain degree influenced the tactical methods employed.

We may consider whether Port Arthur was of such value to the Russians as to make it worth their while to lock up so large a force in it, and to disorganise the strategic action of their main army in efforts for its relief. Would not Kuropatkin have been better advised to concentrate his energies on beating the Japanese main armies in the field and meanwhile to let Port Arthur go? If he had crushed the Japanese field armies and driven them away, Port Arthur must again have fallen into his hands. If the reverse happened the fortress was certain eventually to be lost for good in any case. In fact the place was bound to become the prize of the victor in the field warfare, so it may seem that it would have been wiser to fight it out in the latter way. Other arguments can be adduced on both sides of this question, but looking at it from the point of view of the land campaign alone, there are good grounds

for the opinion that the retention of Port Arthur by the Russians

was a mistake.

We are bound, however, to look also at the naval aspect of the question, which in this war was the very kernel of the problem. It was only by gaining and keeping the command of the sea that the Japanese could successfully prosecute the war on land, and by wresting it from them that the Russians could make certain of victory. Vladivostock being ice-bound in winter, the possession of Port Arthur was essential to the Russians as a base, open at all seasons of the year, to their fleets, and also to permit of the junction of their Baltic fleet with that already in the Far East. For these very reasons its early capture was vital to the Japanese to ensure their naval victory. These considerations undoubtedly gave rise to the decision of the Russians to defend it, and to the remarkable efforts and heavy sacrifices incurred by the Japanese in their efforts to take it.

We can now pass on to the events of the siege. The battle of

Operations immediately prior to the investment.

Nanshan was fought on the 26th May; Dalny was occupied by the Japanese on the 1st June, the Russian communications cut and the fortress isolated. Between Dalny and Port Arthur the

Russians took up three defensive positions in succession. The first position was captured by the Japanese on the 26th June and the second on the 27th and 28th July, the delay of a month having been incurred by the attackers to admit of the arrival of reinforcements. The third defensive position was only 1½ to 2½ miles in front of the permanent

defensive line of Port Arthur, and on the night of the 30th-31st July the Japanese attacked it by surprise and drove out the Russians, who retired into their main line of defences. Two large detached hills, Taikoshan\* and Shiokoshan, about a mile in front of the right of the main line of works still held out. From these hills a flanking fire could be brought to bear on the positions of any besieging force operating against the main defensive line. The Japanese attacked and captured them on the 7th and 8th August, and from this date the actual siege may be said to have commenced.

#### DESCRIPTION OF THE LINE OF WORKS.

The main line of works must now be described. The land front of Port Arthur is divided into two distinct sections by a broad valley running almost due north and south, which separates the new town from the old town and dockyard. Through this valley runs a river, and also the railway and main road leading into the place.

The Eastern Section of the defensive line had its right flank based on the sea, and thence ran along a line The Eastern Section. of hills, some 500 to 600 feet high and about 1½ to 2 miles distant from the dockyard. The works were of three descriptions:—(i) The permanent forts and batteries. These consisted of three large forts, namely, North Kikuanshan, Ehrlungshan § and Sungshushan, and a number of isolated batteries. The forts were large stronge closed works, constructed of concrete, with deep ditches all round, either cut out of the natural rock or rivetted with masonry. The ditches on the front faces were flanked either by caponiers or by galleries in the counterscarp wall. These forts contained siege guns as well as infantry. The isolated batteries were of concrete and their design was of the ordinary type. (ii) The temporary earthworks, begun after the outbreak of war and continued during the progress of the siege. Among these were many strong redoubts, generally for infantry only, but sometimes containing guns. In addition, there were miles of infantry trench running along the contours of the principal hills. Most of these earthwork defences were of the same section, namely, a deep, narrow trench, often as much as nine feet deep and about six feet wide, with overhead cover, about two feet wide, of sandbags and earth resting on planks and supported by timber posts. The fire was delivered through sandbag loopholes. In very exposed situations the trenches were completely covered in from front to rear, leaving only the loopholes open for firing through. Steel loophole plates were also used in some cases. Numerous traverses were provided to guard against enfilade fire and to localise the effect of shell bursting in the At the beginning of the siege the trenches were open and shallower, and as the operations progressed the above form was



<sup>\*</sup> Ta-Ku Shan. † Hsiao Ku Shan.

<sup>‡</sup> Chi-Kuan Shan. § Ehr-lung Shan.

<sup>|</sup> Shung-Shu Shan,

gradually evolved. (iii) Lastly there was the Chinese Wall—a line of earth parapet of weak profile running practically continuously along the greater part of the whole length of this section. This was a relic of the Chinese occupation of the place, and had been stormed by the Japanese in 1894. Though of little defensive value it afforded perfect covered communication between the various works and in places it was greatly strengthened and made into strong positions for infantry.

The ground occupied by the Eastern Section of the position

was on the whole favourable for defence. Features of the counhad a wide field of fire and good command. The various spurs on which the principal works were located supported each other well, gave favourable sites for batteries and cover for the movement of reserve troops. It had certain grave defects however. It was too close to the harbour and town, which could be bombarded as soon as the attackers had obtained a footing on the main ridge. The high banks of the river in the valley below the ridge and the steep lower slopes of some of the hills afforded covered places where the attackers' infantry could mass, and numerous ravines running up into the Russian positions enabled the attackers to approach under cover in some cases close up The defective siting and design of some of the works to the works. led to the existence of a large amount of dead ground in their immediate vicinity. Moreover a line of hills, which existed parallel to the Russian ridge and about 4,000 yards from it, afforded a good line for the attackers, for its valleys, hollows and reverse slopes formed excellent positions for batteries and for depôts, camps, etc., while the heights gave good facilities for observation of fire and control of the operations. The latter, however, is a defect which it will hardly ever be possible to avoid in these days of long ranging weapons.

The line of defence in the Western Section of the land front ran from the railway westward to Itzushan• (Chair Hill) then south and south-west vid the Antzushan† Hills, North and South Tayanko‡ to the sea at the west end of the harbour.

The principal heights had been defended by strong permanent forts and batteries, and others by temporary works of similar character to those of the Eastern Section already described. These hills were generally from 350 to 400 feet high and the defensive position was a strong one, having open ground in front. It suffered, however, even in a greater degree than the Eastern Section from the defect of being much too close to the town and harbour. About a mile beyond and to the west of the centre of the Western Section is a hill named Royusan, but better known to fame as 230-Metre Hill, so called from its height which was nearly 700 feet above sea-level The crest of this hill commands a splendid view of the interior of

<sup>\*</sup> I-tzu Shan.

<sup>†</sup> An-tzu Shan.

the Russian position and of the town and anchorage, and it was evident that as soon as the Japanese should occupy it they would be able to destroy the town and docks and the Russian men-of-war at anchor in the harbour. It was therefore essential to hold this hill, which was occupied by a strong earth redoubt and was subsequently the scene of the bloodiest combats of the siege.

The occupation of 203-Metre Hill necessitated the defence also of Akasakayama and Namakayama, two other hills a little to the north of it. This outlying position was connected by lines of

trenches and obstacles with Fort Itzushan in the main line.

In addition to the main lines of works the Russians had a considerable group of advanced works covering the Advanced works near Shui-shien. broad valley which separates the Eastern from the Western Section and gives access from the The large village of Shui-shien\* was occupied by the defenders at the beginning of the siege, and was connected by a line of trenches and obstacles with a strong redoubt called Fort Kuropatkin about a mile to the east. The principal object of the latter was to cover the water-works which were situated at the village of Lungyen.+ Near the latter and just north of the railway was another work called Fort Lungyen, connected with Fort Kuropatkin by a deep blinded trench, and in rear of Shui-shi village there were several small works. It was undoubtedly a weak point in the defence that the water-supply should be beyond the main line of defences, and when the outlying works covering it were captured by the Japanese. the mains were cut and the garrison and inhabitants had to rely on distilled sea water and on Chinese wells.

The land defences of Port Arthur were very far from complete when hostilities broke out. This is evident from the fact that permanent works had only been provided on a portion of the defensive line. Moreover of the works which existed several were in a very unfinished state. A very large amount therefore of hasty fortification work had to be carried out just before and during the siege both by the garrison and by Chinese labour organized and supervised by Russian Engineer officers.

On some hills in rear of the main line of works on the northeast front a somewhat disconnected series of
earthworks were thrown up during the course
of the siege to form a second line of defence
for that portion, where it was evident that the Japanese main effort
was directed. In addition to this a continuous girdle of parapet
and deep rock-cut ditch, with strengthening redoubts at intervals,
completely encircling the old town and dockyard was constructed
during the period that clapsed between the outbreak of war and the
beginning of the siege. It is impossible to conceive of any circumstances under which this monumental piece of work could have been

<sup>†</sup> Lung-yen.



<sup>\*</sup> Shui-shih-ying.

of the slightest defensive value since it lay in low ground, commanded at short range from the hills in front. Its execution was a lamentable waste of time and labour, which might have been profitably employed in other ways.

Obstacles were freely employed by the Russians in strengthening their positions. Continuous lines of wire entanglement extended along the front of all the works, closed all avenues of approach, such as the broad Shuishi valley, and connected up the outlying or advanced works with the main line. The obstacles were always under close rifle fire from the front and often from the flank as well.

At the beginning of the siege 259 guns had been mounted on the land fronts of the fortress. Of these about a third were guns and howitzers of approximately 6-inch calibre, the remainder were field guns of various sorts and machine guns. Subsequently 240 naval guns of various calibres were landed from the Russian fleet and mounted on the land works. Of these one was a heavy 8-inch gun; 22 were medium 6-inch and 4.7-inch; the remainder light field guns, and small Q.-F. and machine guns. A few also of the big guns (10-inch and 11-inch) in the sea forts were turned round to fire on the besiegers' works.

The strength of the garrison at the beginning of the siege appears to have been about 40,000 men, of whom about 7,000 were artillery, about 500 engineers, and the remainder infantry. The disproportionately small number of engineers for the work that was required to be done may be noticed. Besides the above, when the Russian ships gave up sea fighting, some 10,000 sailors and marines were landed, and did permanent duty in the works of the land front.

In addition to the land defences and armament described above, the sea front of Port Arthur was strongly defended by coast batteries, armed with heavy guns and howitzers, and by search-lights. As this lecture deals solely with the land siege it is not necessary to describe the coast defences. Admiral Togo never risked his battleships within range of their guns. His operations were confined to a blockade of the port and daring attempts by torpedo-boats to sink the Russian ships and to block up the exit. The Russian ships entirely gave up the sea contest at an early stage in the proceedings, and their crews were used on the land works.

#### THE SIEGE OPERATIONS.

The Japanese army before Port Arthur in August 1904 consisted of three divisions, namely, the 1st, 9th and 11th, and two independent reserve infantry brigades, each of six battalions. It should be mentioned that each Japanese division includes a battalion, composed of three companies of engineers. The besieging army had at that time about 190 medium guns, howitzers and mortars, from 5 9-inch calibre down-

wards, and 180 field and mountain guns. Very few of these guns could have much effect upon permanent works.

As already stated, on the night of 7th-8th August the Japanese carried the two hills, Takoshan and Shiokoshan, Beginning of the siege. First assault on Fort Kuropatkin. about a mile in front of the works on the Russian right. They then proceeded to push back the Russian advanced troops, close in round the line of permanent works, and establish a strong investing line. The Japanese divisions now took up the positions they occupied all through the siege, namely, the 1st Division on their right, opposite the northwest face of the fortress; the 9th Division in the centre, opposite the north-east face; and the 11th Division on the left, opposite the east face. The driving in of the Russian advanced troops entailed on the west side a good deal of fighting, and on the 19th August the 1st Division captured the works on 174-Metre Hill, which stands out on the extreme left of the Western Section of the defences. same evening, after a general and heavy bombardment of the Russian works, the 9th Division assaulted Fort Kuropatkin, capturing a portion of it, but on the following day were driven out again by a strong counter-attack, after hand to hand fighting.

The Japanese infantry then began to push their trenches in closer to the defenders' lines and the bombardment was continued and increased, special attention being paid to the works about the centre of the Eastern Section of the defences, which it became evident was the point selected by General Nogi for the principal attack.

Capture of the Panlung works and further unsuccessful assaults.

On the morning of the 21st the Japanese infantry began to advance across the open valley against Fort Panlung\* East, and during that day and the following night this fort was heavily attacked, one portion being assaulted five times. On the

morning of the 22nd, however, the Russians were still in possession. That morning this work was again attacked and by midday the Japanese had reached its ditch. In the afternoon fresh columns of Japanese assaulted Panlung West, and by evening both works were On the night of the 23rd-24th the Russians made in their hands. determined efforts to drive the Japanese out of these two works but were repulsed after heavy fighting. Immediately after repelling these counter-attacks, the Japanese, following up the retiring Russians, furiously attacked the Chinese Wall and the hills on which Bodait and "H" work were situated. It is evident that the former, which commanded the whole of the interior of the fortress, was the real objective of the Japanese in these determined attacks. They got some way up Bodai and nearly to the top of "H" before they were stopped. The Russians had search-lights playing on the attacking columns and this enabled them to bring a devastating fire to bear, both from the works attacked and from those on each flank.

Japanese losses were terrible, heaps of bodies marking the path of the assaulting columns. The total casualty roll of the Japanese during these three days' fighting amounted to the enormous total of 14,000. After this disastrous repulse General Nogi decided to await the arrival of heavy guns to reduce the Russian works, and to have recourse to regular siege operations.

We may pause for a moment to ask why so desperate an under-

Comments on the first assaults.

taking was attempted as an assault across open ground on good troops in strong defensive works. Though the works actually

assaulted were not themselves of the permanent type, yet they were of considerable strength, were supported by powerful permanent works on either flank, and had not been in any way injured by artillery fire. The history of all the wars of the last 30 years shows us that an enterprise of this nature has very little chance of success. Why then did the Japanese commander attempt a task in which the odds were so greatly against him and which resulted in the throwing away of the lives of thousands of brave men? It is impossible to say, but the following are some of the reasons which may have actuated him.

It will be remembered that when discussing the strategic value of Port Arthur it was mentioned that its early capture was of great importance to the Japanese in order to deprive the Russians of a warm water harbour for their fleets and to prevent the Baltic fleet from joining the one already there. They may also have considered that the capture of the fleet itself which lay in its harbour, and the ensured sea predominance which would at once ensue were worth the great loss of life which the assaults would Again General Nogi may have been pressed to conclude the siege quickly in order that his army might be free to go north and join the main Japanese armies in a decisive attack on Kuropatkin, where their presence at this period would certainly have made a great difference. It is probable in any case that General Nogi wanted little pressing, for his predilections as a fighter are well known, and it was he who ten years before had commanded the Japanese army which successfully took by assault the same fortress in the war against China. There are grounds indeed for the suspicion that the Japanese underestimated the power and resolution of their opponents and the strength of their defences, and were under the belief that they would give way before a well delivered coup de main. This view is strengthened by the fact that up to this period their heavy guns for the bombardment of the defensive works had not been brought up. Whatever may have been the reason, the Japanese paid dearly for their error of judgment by the loss of an immense number of the flower of their army, by lowering to a certain degree the moral of the survivors and by raising to a corresponding extent the spirit of the defenders from the fact that they had successfully beaten off these determined assaults.

Adoption of formal siege operations and to weaken the defences by the use of heavier artillery before again venturing on an assault. During the remainder of August and the first half of September the Japanese pushed forward zig-zag trenches of approach and opened successive lines of new parallels nearer and nearer to the Russian lines and preparations were made to conduct the siege according to scientific rules. On the night of 28th-29th August the Russians made another determined counter-attack on East and West Panlung but

Early in September six 11-inch howitzers, two naval 6-inch and two naval 47-inch guns were brought up and mounted in battery. At the same time large reinforcements arrived from Japan to replace the casualties up to date and to bring the depleted cadres up to war strength.

were again repulsed.

On the 19th September the Japanese 9th Division again attacked.

Fort Kuropatkin. Up till 5-30 P.M this work and those near it were subjected to a bombardment—at first slight and later increasing considerably in intensity—from the two 6-inch and four 4.7-inch naval guns, about 40 other siege guns and a large number of field and mountain guns. At the above hour the assault was delivered from the nearest trench and by dark the Japanese had established themselves in the ditch and on the exterior slope of the work.

On the same day after a heavy bombardment of siege and field guns the 1st Division at 6 P.M. assaulted the redoubt on Namakayama on the extreme right but by nightfall had not secured any footing. During the night the capture of Fort Kuropatkin was completed, and on the following day Fort Lungven and the four small redoubts south of Shui-shien were also taken. By the capture of this group of works the water-supply of the fortress was cut off. On the same day and the following night they captured Namakayama and attacked the fort on 203-Metre Hill, where they got possession of one corner of the work but were driven out again on the 22nd. The Japanese losses in the operations of these three days were approximately 3,000, of which 2,300 were in the 1st Division alone, but appreciable progress had been made.

During the next three weeks the Japanese vigorously pushed forward saps against the forts on the left of the Eastern Section, namely, Sungshu and Ehrlung and mounted more heavy guns among which were twelve more 11-inch howitzers. The Russians made various sorties against the Japanese works and on one occasion captured a saphead, but were turned out a day later. On the night of 11th-12th October troops from the 1st Division crossed the railway and effected a lodgment on the north face of Sungshu at the foot of the glacis.



On the 16th October a well planned attack was made on "G" work, which had been constructed by the Capture of "G" work. Russians within the last six weeks, and against which sapping had been carried on from Fort Panlung West for some time past. The attack also embraced the Russian advanced trench on Ehrlung some 50 yards south of the position occupied by the Japanese on the 12th, and an underfeature some 300 yards north-east of Ehrlung. An extremely heavy bombardment was directed on the works from 50 heavy siege guns, of which six were 11-inch howitzers, and about 50 field and mountain guns. of the batteries were able to bring an oblique fire on the works, the practice was good and the fire of great intensity. After 11 hours of this the infantry dashed across the hundred vards of open ground between their advanced trench and the point of attack and reached the nearest portion of "G" work with little opposition and trifling loss. An hour later they had similarly secured the other two objects of their attack. The Russians however still held on to the western edge of "G" work and were not dislodged from it for ten days.

This is an example of the good results that will generally follow a well planned attack. We see that by means of the siege trenches the attacking troops could be massed under cover in close proximity to the work to be assaulted. An overwhelming artillery fire, much of it from an oblique direction, was brought to bear on the latter. The result was success, accompanied by very small loss. This method and its results were very different from those of the earlier Japanese assaults.

On the 26th October a general attack was made on the Russian defences of the Eastern Section from Assaults of 26th October on Eastern Forts. The Kikuan. Sungshu to following objectives were allotted to the attacking divisions:-1st Division, Fort Sungshu, and the heights south and south-east of it; 9th Division, Fort Ehrlung and "P" work; 11th Division, the Kikuan works. In front of each of the above works the Russians had got advanced trenches, generally deep and blinded head cover, sometimes traversed and sometimes enfiladed from works in rear. The assaults therefore were on these advanced trenches and not on the forts themselves. By this time the Japanese had succeeded in pushing forward their advanced parallels to within 30 or 40 yards of the Russian advanced trenches, and at North Kikuan they had tunnelled down to the counterscarp gallery, a corner of which was now in their possession.

During the earlier part of the day the Japanese artillery fire was of a desultory character, but at 3 P.M. it increased greatly in intensity, a very heavy bombardment being directed against Sungshu and Ehrlung, particularly the latter. At 5 P.M. punctually an assaulting party from the 1st Division, consisting of one company (200 men), rushed the trench in front of Sungshu, and another company from the 9th Division at the same time entered the trench

in front of Ehrlung, while a third company similarly assaulted the Ehrlung trench a little to the right of the one last named. Hardly any loss was suffered during these assaults. The assaulting companies were speedily supported by others and rifle fire opened from the captured trenches. At the same time other parties moving out from the Japanese parallels began digging approach trenches from the latter to the captured works. These parties worked with

great vigour and soon completed them.

During the above attack the Japanese succeeded in securing the remainder of "G" work, of which part had been captured on 16th October, and also all the ground between the railway and the Sungshu and Ehrlung hills. During the ensuing night the Russians made four counter-attacks on the Sungshu trench, but without success. The losses in the Japanese 1st and 9th Divisions during this fighting amounted only to 440 men. The operations of the 11th Division in front of the Kikuanshan group of works during this day had been confined to a demonstration.

In the course of the above attack the Japanese made use of bombs fired from the advanced parallels out of wooden mortars. The bombs were tin cylinders about 5 inches diameter and 6 inches long filled with explosive and fitted with a piece of fuze which was

lighted when the mortar was fired.

from wooden mortars in the advanced parallels.

On the 30th October another general attack was delivered on the Eastern Section of works. It was Assaults of 30th October on the Eastern Forts. preceded by a bombardment from all the siege and field guns, commencing at 9 A.M. and gradually increasing in intensity. Every Russian work on the front to be attacked was subjected to a perfect storm of fire. organisation of the artillery attack had been well thought out, oblique and enfilade fire being used as much as possible. Some time before the assault the field and mountain guns were pushed in to 1,500-1,000 yards range, and opened on the Russian parapets with shrapnel, while a hot fire of grenades and bombs was kept up

At 1 P.M. the infantry dashed out of their trenches and delivered a simultaneous attack on seven different works, namely, Sungshu, Ehrlung, "P", North Kikuan "Q", Kobuyama and Kikuan Battery. A deadly fire of rifles, machine guns and shrapnel was directed on all the storming parties from their front and both flanks, but notwithstanding this they pressed on, cutting the wire entanglements, to the parapets of the temporary works and the crest of the glacis of the permanent forts.

In a few moments the trench just below the crest of "P" was captured after a short fight. The assaults on "Q" and North Kikuan failed, though at the latter a footing was secured at the edge of the ditch. At Kobuyama the Japanese captured the trench which ran round the hill below the summit, but the latter remained in Russian hands. In front of E. Kikuan, which consisted of a strong deep blinded trench round a battery of siege guns, the fighting

was the hottest and the losses the greatest. The 12th Regiment with great dash rush distraight at the trench and entered it. A quarter of in homeleast they but the trench and made for the top of the work. On the exposed selpe they came under a terrific enforce fire of rules and shripped from neighbouring works. Only esting mumber succeeded in reaching the gins at the top and they were all kined or driven out. Supports were brought up but they only succeeded in reaching the trench first captured and could not each maint unither hold on it being eventually driven back to their own trench after losing many men.

The columns assaulting Singshu soles ded in reaching the distination after suffering some loss, and entered into it. The distribution of to be much deep rand wider than was anticipated and the Rossians in the counterscape gracines at once shot down all whe arten profit mount the parapet of the work. Larring was attested by a column from the west sple only who also succeeded in reaching the distribution. The difficulty it not impossible by of crossing the distribution of these permanent works until the counters apply cross held been destroyed apparently became evalent to the depends leaf is the those articles were not by groundly apparently and only reserved in securing bedzinents on the crossis of the group of these two works.

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danger; the Russians took to countermining and generally made a most obstinate resistance. The underground warfare was of a very determined character.

About the 16th November the 7th Division landed at Dalny for the reinforcement of General Nogi's army. Large drafts were also received for the 1st, 9th and 11th Divisions in order to complete their exhausted cadres, and, on account of the enormous losses among the engineers, three additional companies of that arm were brought down from the Northern armies, and two reserve companies

from Japan also joined the besieging army. By the 20th November all these additional troops had taken their places in line with their comrades.

The next great attack on the works of the Eastern Section took place on the 26th November. By this time the counterscarp defences of the three perbor on Eastern Forts.

manent works had to a large extent been destroyed; portions of the counterscarp walls had been blown down, thus partially filling up the ditches with debris and facilitating their transit. The attack, as on previous occasions, was preceded by a heavy and well directed bombardment. The storming parties succeeded as before in getting into the ditches, and essayed to mount the parapets. Here they were subjected to intense fire and to showers of grenades from the defenders. In some cases a few men reached the parapets and engaged in bayonet contests with the defenders, but the Russian resistance was too stout and all the attacks melted away. Nothing was gained by this day's work. A night attack was undertaken that same night against Sungshu covering battery.—a new work—but it was discovered early and repulsed with loss.

Attacks on Western ese determined to turn their attention to the west, and on the morning of the very next day they hotly attacked 203-Metre

Hill and Akasakayama. The Russian defences of the former hill consisted of a strong blinded breastwork on the summit, and two lines of trench completely encircling the hill below it. The Japanese had pushed their saps up too close to the lower trench. The Russian works were heavily shelled by 11-inch and other siege pieces. The assault began at 8 a.m. and fighting continued all that day and the following night. The Japanese succeeded in carrying both lines of trench and in temporarily establishing themselves close to the summit of 203 Metre Hill, but were ultimately driven down to the lower trench which they retained. The attack on Akasakayama failed entirely, but the assailants established themselves in a stone breastwork about 50 yards from the Russian trenches. The losses on both sides throughout this fighting were enormous. On

<sup>\*</sup> Shewn as . Tuniulus Battery " on Map.

the 30th the Russians attempted without success to turn the Japanese out of the stone enclosure below. Akisakayama, and at 2.30 a fresh brigide of the 7th Japanese Division assaulted the western peak of 203 Metre Hill in a dense formation but were repelled after enormous losses had been incurred, by the combined effect of refine, shrapnel and han Egrenades.

On the 1st the hill top and its reverse slopes were heavily shells it, and an attack was once more delivered with fresh troops. They succeeded in getting close up to the summit till only the purspect of the Russian work separated the attackers from the defenders but of whom threw grenides at each other over it. But this hold constant be retained and the assulants were driven back. On the 2still 3rd and 4th, the Dapanese continued their supschoser up to the Russian works and it was decided to storm the latter the next dispand carry them, at all costs.

Eight battalions of the 7th Division were employed in 12, a attack, commencing about midday what the reverse slopes of the hill were subject of to a very heavy artillery fire, which prevented the Russians sending up reinforcements. The assaults were made and otherent formation to those of the 30th November. The companies trickled out of the sepheads and advanced parallels in two and three reformed under cover of the upper Russian trench and advanced up the hill in extended order.

Reinforcements were sent up in the same way and in about an hour the whole summit was occupied. Thus at lest the Japan's sourced the hill whose occupation meant so much to them and tir which they had so rated so many lives. The capture of 20 s Metri Hill caused the evacuation of Akisakayama, which it over each standard the fighting from November 20th to December 5th in Laster the Japan's closses are estimated to have been over 14000. It is believed that 9000 or 10000 of these occurred at 203 Metri Hand Akisakayama the soops of which after the fighting were every years ted with bishes.

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main shafts had been carried under the parapet of North Kikuan Fort to a length of 40 feet. Two large mines were fired at 2-30 p. m. that day and the Japanese assaulting columns instantly rushed forward. The Russian defenders however with machine guns kept them at bay for several hours. At 7-30 Lieutenant-General Samejima commanding the 11th Division personally led forward a half battalion of fresh troops and succeeded in effecting an entry; by 11 p.m. the fort was in Japanese hands and all its defenders either bayonetted or driven out. This was the first of the permanent forts to fall. On the 28th December, two mines were similarly fired under the north face of Ehrlung, killing a large number of the defenders. The Japanese instantly assaulted, but hand to hand fighting went on from 10 a.m. till 6 p.m. before the work was finally carried and the Japanese losses amounted to nearly 1,000, the whole Russian garrison, having been under 500 in number, of whom few escaped.

At Sungshu the Japanese engineers determined to out-do the feats of their comrades at the other forts, and not only placed two mines under the parapet, but continued the gallery till they could place a large charge fairly under the magazines and the casemates in which the garrison were living. On the 30th these mines were fired and the terrific explosion killed or entombed a large number of the Russians, and the assaulting parties met with little resistance from the remainder of the garrison. Thus the third permanent fort passed into Japanese hands.

On the 1st January the Japanese assaulted the work on Bodai

and had all but carried it when the Russians blew it up, killing many of the attackers.

That afternoon General Stoessel sent a flag of truce to General Nogi and proposed a conference to discuss terms

of surrender. At 2 A.M. the next morning the Russians evacuated and blew up Kikuan East Battery, the middle one of the works of that name. "Q," "M," "N" and "R" works were also occupied by the Japanese during the course of the same night.

Throughout that day the negotiations for surrender continued and the same evening the capitulation was signed, and the great siege came to an end, having lasted 148 days.

The Japanese losses during the siege are said to have amounted to the corrowous total of 52 000 killed and

to the enormous total of 52,000 killed and wounded, and that of the Russians to 16,000. At the capitulation 25,000 Russian officers

and men of all ranks surrendered, in addition to 18,000 sick and wounded in hospital. Among the stores taken over by the Japanese were over 21 million rounds of small arm ammunition, 546 guns of various calibres, with 82,000 shell, nearly 2,000 horses, very

<sup>\*</sup> From accounts seen subsequent to this lecture it appears that the explosion in the magazine and casemates which killed or entombed the defenders was accidental, and was probably caused by the discharge of the Japanese mines under the parapet.



of the slightest defensive value since it lay in low ground, commanded at short range from the hills in front. Its execution was a lamentable waste of time and labour, which might have been profitably employed in other ways.

Obstacles were freely employed by the Russians in strengthening their positions. Continuous lines of wire entanglement extended along the front of all the works, closed all avenues of approach, such as the broad Shusshi valley and connected up the outlying or advanced works with the main line. The obstacles were always under close rifle fire from the front and often from the flank as well.

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## THE STELE OPERATIONS

The Japanese army bet re Port Arthur in August 1904 consisted of three days, and manage the 1st 9th and 11th and two independent some intertry brights such of six barra, as. It should be many nod that such Japanese dies in in lates a barra, in conposed of three conpenses of engineers. The besigning army had at that time also it 1 so medium goes howevers and in rears to in 50 m had to tree described

wards, and 180 field and mountain guns. Very few of these guns could have much effect upon permanent works.

As already stated, on the night of 7th-8th August the Japanese carried the two hills, Takoshan and Shiokoshan. Beginning of the siege. First assault on Fort Kuropatkin. about a mile in front of the works on the Russian right. They then proceeded to push back the Russian advanced troops, close in round the line of permanent works, and establish a strong investing line. The Japanese divisions now took up the positions they occupied all through the siege, namely, the 1st Division on their right, opposite the northwest face of the fortress; the 9th Division in the centre, opposite the north-east face; and the 11th Division on the left, opposite the east face. The driving in of the Russian advanced troops entailed on the west side a good deal of fighting, and on the 19th August the 1st Division captured the works on 174-Metre Hill, which stands out on the extreme left of the Western Section of the defences. same evening, after a general and heavy bombardment of the Russian works, the 9th Division assaulted Fort Kuropatkin, capturing a portion of it, but on the following day were driven out again by a strong counter-attack, after hand to hand fighting.

The Japanese infantry then began to push their trenches in closer to the defenders' lines and the bombardment was continued and increased, special attention being paid to the works about the centre of the Eastern Section of the defences, which it became evident was the point selected by General Nogi for the principal

attack.

On the morning of the 21st the Japanese infantry began to advance across the open valley against Fort Panlung works and further unsuccessful following night this fort was heavily attacked, one portion being assaulted five times. On the

morning of the 22nd, however, the Russians were still in possession. That morning this work was again attacked and by midday the Japanese had reached its ditch. In the afternoon fresh columns of Japanese assaulted Panlung West, and by evening both works were in their hands. On the night of the 23rd-24th the Russians made determined efforts to drive the Japanese out of these two works but were repulsed after heavy fighting. Immediately after repelling these counter-attacks, the Japanese, following up the retiring Russians, furiously attacked the Chinese Wall and the hills on which Bodait and "H" work were situated. It is evident that the former, which commanded the whole of the interior of the fortress, was the real objective of the Japanese in these determined attacks. some way up Bodai and nearly to the top of "H" before they were stopped. The Russians had search-lights playing on the attacking columns and this enabled them to bring a devastating fire to bear, both from the works attacked and from those on each flank.



Pan-lung Shan.

Japanese losses were terrible, he ups of bodies marking the path of the assaulting columns. The total casualty roll of the Japanese during these three days fighting amounted to the enormous total of 14 000. After this disastrons repulse General Negrode and to awart the arrival of heavy gains to reduce the Russian works and to have recourse to regular single operations.

We may pause for a moment to ask why so desperate an undertaking was attempted as an assault across open ground on good troops in strong detersive works. Though the works actually

assaulted were not themselves of the personnent type, yet they were of considerable strength were supported by powerful permanent works on either flank, and hiel not been in any way injured to artificity five. The history of all the wars of the last 30 years shown us that an enterprise of this nature has very lattle chance of success. Why then did the Japanese commander attempt a task in which the odds were so greatly against him and which resulted in the throwing away of the lives of thousands of brave ment. It is impossible to say but the following are some of the reasons which may have actives him.

It will be remembered that when discussing the strategic variet of Port Arthur it was mentioned that its early capture was of great importance to the Japanese in order to deprive the Russians of a warm water furbour for their flees and to present the fixee theet from joining the one aready there. They may also have considered that the capture of the floot itset which has more harbour, and the ensured sea predominance which won father a ensue were worth the great loss of I to which the issuers and I entail. Again General Nogi may have been pressed to a new rethe seege quickly in order that his army in gur by free rings in eaand join the main depanese arones in a decisive attack on Keenpatkin where their presence at this period would certainly becmade a great difference. It is probable in any case that therees Noge wanted fittle pressing for his product, is a said ther are west known and it was he whereten years, but to had a the dispute we army which was east by to keep their contract of fortress in the war against China Albert we gromes a need for the suspecion that the Japanese indirect moved the power and resolution of their operations and the story has their operations. and were under the best for a real wood governor to a wood denvered coup de recent the analysis of personal experience great that up to this period their body growth recommendation the defensive works high in Cheen in the ip. We have now have been the remain the digrams particles where the receiving ment by the constant process may be professed with a point as a had carried to a contract of the more of the according rusing to a corresponding extent the spector could be present the fact that they had not seen at a leaven of the secretary 

Adoption of formal siege operations and to weaken the defences by the use of heavier artillery before again venturing on an assault. During the remainder of August and the first half of September the Japanese pushed forward zig-zag trenches of approach and opened successive lines of new parallels nearer and nearer to the Russian lines and preparations were made to conduct the siege according to scientific rules. On the night of 28th-29th August the Russians made another determined counter-attack on East and West Panlung but were again repulsed.

Early in September six 11-inch howitzers, two naval 6-inch and two naval 47-inch guns were brought up and mounted in battery. At the same time large reinforcements arrived from Japan to replace the casualties up to date and to bring the depleted cadres up to war strength.

On the 19th September the Japanese 9th Division again attacked.
Fort Kuropatkin. Up till 5-30 P.M this work and those near it were subjected to a bombardment—at first slight and later

increasing considerably in intensity—from the two 6-inch and four 4.7-inch naval guns, about 40 other siege guns and a large number of field and mountain guns. At the above hour the assault was delivered from the nearest trench and by dark the Japanese had established themselves in the ditch and on the exterior slope of the work.

On the same day after a heavy bombardment of siege and field guns the 1st Division at 6 P.M. assaulted the redoubt on Namakayama on the extreme right but by nightfall had not secured any footing. During the night the capture of Fort Kuropatkin was completed, and on the following day Fort Lungven and the four small redoubts south of Shui-shien were also taken. By the capture of this group of works the water-supply of the fortress was cut off. On the same day and the following night they captured Namakayama and attacked the fort on 203-Metre Hill, where they got possession of one corner of the work but were driven out again on the 22nd. The Japanese losses in the operations of these three days were approximately 3,000, of which 2,300 were in the 1st Division alone, but appreciable progress had been made.

During the next three weeks the Japanese vigorously pushed forward saps against the forts on the left of the Eastern Section, namely, Sungshu and Ehrlung and mounted more heavy guns among which were twelve more 11-inch howitzers. The Russians made various sorties against the Japanese works and on one occasion captured a saphead, but were turned out a day later. On the night of 11th-12th October troops from the 1st. Division crossed the railway and effected a lodgment on the north face of Sungshu at the foot of the glacis.

On the 16th October a well planned attack was made on "G" work, which had been constructed by the Capture of "G" work. Russians within the last six weeks, and against which sapping had been carried on from Fort Panlung West for some time past. The attack also embraced the Russian advanced trench on Ehrlung some 50 yards south of the position occupied by the Japanese on the 12th, and an underfeature some 300 yards north-east of Ehrlung. An extremely heavy bombardment was directed on the works from 50 heavy siege guns, of which six were 11-inch howitzers, and about 50 field and mountain guns. Many of the batteries were able to bring an oblique fire on the works. the practice was good and the fire of great intensity. After 14 hours of this the infantry dashed across the hundred yards of open ground between their advanced trench and the point of attack and reached the nearest portion of "G" work with little opposition and triffing loss. An hour later they had similarly secured the other two objects of their attack. The Russians however still held on to the western edge of "G" work and were not dislodged from it for ten days.

This is an example of the good results that will generally follow a well planned attack. We see that by means of the siege trenches the attacking troops could be massed under cover in close proximity to the work to be assaulted. An overwhelming artillery fire, much of it from an oblique direction, was brought to bear on the latter. The result was success, accompanied by very small loss. This method and its results were very different from those of the earlier

Japanese assaults.

On the 26th October a general attack was made on the Russian defences of the Eastern Section from ssaults of 26th October The following Sungshu to Kikuan. objectives were allotted to the attacking divisions:-1st Division, Fort Sungshu, and the heights south and south-east of it; 9th Division, Fort Ehrlung and "P" work; 11th Division, the Kikuan works. In front of each of the above works the Russians had got advanced trenches, generally deep and with blinded head cover, sometimes traversed and sometimes enfiladed from works in rear. The assaults therefore were on these advanced trenches and not on the forts themselves. By this time the Japanese had succeeded in pushing forward their advanced parallels to within 30 or 40 yards of the Russian advanced trenches. and at North Kikuan they had tunnelled down to the counterscarp gallery, a corner of which was now in their possession.

During the earlier part of the day the Japanese artillery fire was of a desultory character, but at 3 P.M. it increased greatly in intensity, a very heavy bombardment being directed against Sungshu and Ehrlung, particularly the latter. At 5 P.M. punctually an assaulting party from the 1st Division, consisting of one company (200 men), rushed the trench in front of Sungshu, and another company from the 9th Division at the same time entered the trench

in front of Ehrlung, while a third company similarly assaulted the Ehrlung trench a little to the right of the one last named. Hardly any loss was suffered during these assaults. The assaulting companies were speedily supported by others and rifle fire opened from the captured trenches. At the same time other parties moving out from the Japanese parallels began digging approach trenches from the latter to the captured works. These parties worked with great vigour and soon completed them.

During the above attack the Japanese succeeded in securing the remainder of "G" work, of which part had been captured on 16th October, and also all the ground between the railway and the Sungshu and Ehrlung hills. During the ensuing night the Russians made four counter-attacks on the Sungshu trench, but without success. The losses in the Japanese 1st and 9th Divisions during this fighting amounted only to 440 men. The operations of the 11th Division in front of the Kikuanshan group of works during this day had been confined to a demonstration.

In the course of the above attack the Japanese made use of bombs fired from the advanced parallels out of wooden mortars. The bombs were tin cylinders about 5 inches diameter and 6 inches long filled with explosive and fitted with a piece of fuze which was lighted when the mortar was fired.

On the 30th October another general attack was delivered

on the Eastern Section of works. It was preceded by a bombardment from all the siege and field guns, commencing at 9 A.M.

and gradually increasing in intensity. Every Russian work on the front to be attacked was subjected to a perfect storm of fire. The organisation of the artillery attack had been well thought out, oblique and enfilade fire being used as much as possible. Some time before the assault the field and mountain guns were pushed in to 1,500—1,000 yards range, and opened on the Russian parapets with shrapnel, while a hot fire of grenades and bombs was kept up from wooden mortars in the advanced parallels.

At 1 P.M. the infantry dashed out of their trenches and delivered a simultaneous attack on seven different works, namely, Sungshu, Ehrlung, "P", North Kikuan "Q", Kobuyama and Kikuan Battery. A deadly fire of rifles, machine guns and shrapnel was directed on all the storming parties from their front and both flanks, but notwithstanding this they pressed on, cutting the wire entanglements, to the parapets of the temporary works and the crest of the glacis of the permanent forts.

In a few moments the trench just below the crest of "P" was captured after a short fight. The assaults on "Q" and North Kikuan failed, though at the latter a footing was secured at the edge of the ditch. At Kobuyama the Japanese captured the trench which ran round the hill below the summit, but the latter remained in Russian hands. In front of E. Kikuan, which consisted of a strong deep blinded trench round a battery of siege guns, the fighting



was the hottest and the losses the greatest. The 12th Regiment with great dash rushed straight at the trench and entered it. A quarter of an hour later they left the trench and made for the top of the work. On the exposed slope they came under a terrific enfilade fire of rifles and shrapnel from neighbouring works. Only a small number succeeded in reaching the guns at the top, and they were all killed or driven out. Supports were brought up but they only succeeded in reaching the trench first captured and could not even maintain their hold on it, being eventually driven back to their own trench after losing many men.

The columns assaulting Sungshu succeeded in reaching the ditch after suffering some loss, and entered into it. The ditch was found to be much deeper and wider than was anticipated and the Russians in the counterscarp galleries at once shot down all who attempted to mount the parapet of the work. Ehrlung was attacked by a column from the west side only, who also succeeded in reaching the ditch. The difficulty, if not impossibility, of crossing the ditches of these permanent works until the counterscarp galleries had been destroyed apparently became evident to the Japanese leaders, for these attacks were not vigorously supported, and only resulted in securing lodgments on the crests of the glacis of these two works.

During the same night (30th-31st October) the Russians drove the Japanese out of the trench in front of "P" work. The Japanese reserves however were led to the attack with the utmost determination, Major-General Ichinoye, the brigade commander, personally leading them, and not only recaptured the trench but also took the entire work, which was thenceforward called Fort Ichinoye. The summit of Kobuyama was also captured by the 11th Division the same night.

On the afternoon of the 31st the North Kikuanshan [Fort was again attacked. The Japanese sappers, who had penetrated by mining to a corner of the counterscarp gallery, endeavoured to blow down the main gallery. A deafening explosion resulted and the infantry instantly attempted to rush the work. The caponier however was not completely destroyed and the attack was again repulsed.

During the fighting from 26th to 31st October inclusive the total Japanese losses were 151 officers and nearly 2,000 men.

Up to the present time the net result of the Japanese operations had amounted to the following:—Capture of Namakayama on the extreme west, and of East and West Panlung "G," "P,"

and Kobuyama in the Eastern Section.

During the next three weeks the Japanese sappers were busily engaged in mining and tunnelling down towards the counterscarps of the three permanent works, which they either blew up or cleared of the Russians by hand to hand fighting. This was a work of great difficulty and

danger; the Russians took to countermining and generally made a most obstinate resistance. The underground warfare was of a very determined character.

About the 16th November the 7th Division landed at Dalny for the reinforcement of General Nogi's army. Large drafts were also received for the 1st, 9th and 11th Divisions in order to complete their exhausted cadres, and, on account of the enormous losses among the engineers, three additional companies of that arm were brought down from the Northern armies, and two reserve companies from Japan also joined the besieging army. By the 20th November all these additional troops had taken their places in line with their

The next great attack on the works of the Eastern Section took place on the 26th November. By this time Assaults of 26th November on Eastern Forts. the counterscarp defences of the three permanent works had to a large extent been destroyed; portions of the counterscarp walls had been blown down, thus partially filling up the ditches with debris and facilitating their transit. The attack, as on previous occasions, was preceded by a heavy and well directed bombardment. The storming parties succeeded as before in getting into the ditches, and essayed to mount the parapets. Here they were subjected to intense fire and to showers of grenades from the defenders. In some cases a few men reached the parapets and engaged in bayonet contests with the defenders, but the Russian resistance was too stout and all the attacks melted away. Nothing was gained by this day's work. A night attack was undertaken that same night against Sungshu covering battery\*—a new work—but it was discovered early and repulsed with loss.

Attacks on Western ese determined to turn their attention to the west, and on the morning of the very next day they hotly attacked 203-Metre

Hill and Akasakayama. The Russian defences of the former hill consisted of a strong blinded breastwork on the summit, and two lines of trench completely encircling the hill below it. The Japanese had pushed their saps up too close to the lower trench. The Russian works were heavily shelled by 11-inch and other siege pieces. The assault began at 8 A.M. and fighting continued all that day and the following night. The Japanese succeeded in carrying both lines of trench and in temporarily establishing themselves close to the summit of 203-Metre Hill, but were ultimately driven down to the lower trench which they retained. The attack on Akasakayama failed entirely, but the assailants established themselves in a stone breastwork about 50 yards from the Russian trenches. The losses on both sides throughout this fighting were enormous. On

<sup>\*</sup> Shewn as " Tumulus Battery " on Map.

the 30th the Russians attempted without success to turn the Japanese out of the stone enclosure below Akasakayama, and at 2-30 a fresh brigade of the 7th Japanese Division assaulted the western peak of 203-Metre Hill in a dense formation but were repelled, after enormous losses had been incurred, by the combined effect of rifle

fire, shrapnel and hand grenades.

On the 1st the hill top and its reverse slopes were heavily shelled, and an attack was once more delivered with fresh troops. They succeeded in getting close up to the summit till only the parapet of the Russian work separated the attackers from the defenders, both of whom threw grenades at each other over it. But this hold could not be retained and the assailants were driven back. On the 2nd, 3rd and 4th the Japanese continued their saps closer up to the Russian works and it was decided to storm the latter the next day and carry them at all costs.

Eight battalions of the 7th Division were employed in this attack, commencing about midday, while the reverse slopes of the hill were subjected to a very heavy artillery fire, which prevented the Russians sending up reinforcements. The assaults were made in different formation to those of the 30th November. The companies

trickled out of the sapheads and advanced parallels in twos and threes, reformed under cover of the upper Russian trench and

advanced up the hill in extended order.

Reinforcements were sent up in the same way, and in about an hour the whole summit was occupied. Thus at last the Japanese secured the hill whose occupation meant so much to them, and for which they had sacrificed so many lives. The capture of 203-Metre Hill caused the evacuation of Akasakayama, which it overlooked. During the fighting from November 26th to December 5th inclusive the Japanese losses are estimated to have been over 14,000. It is believed that 9,000 or 10,000 of these occurred at 203-Metre Hill and Akasakayama, the slopes of which after the fighting were literally carpeted with bodies.

The capture of these hills led to the complete destruction of the fleet which lay at anchor in the harbour, since, as already mentioned, they commanded a perfect view of the latter and of the town. Observing stations were immediately established on the hills,

big guns placed in battery close by, and within a few days the whole fleet had been either sunk by Japanese shells, or scuttled by the Russians to avoid that fate.

The Japanese now began to push out saps towards the Itzushan and Antzushan works, and also once more turned their attention to the capture of the forts of the Eastern Section, and the whole month of December was employed in endeavours to secure these. Since the last assaults on the latter the Japanese engineers had been engaged in carrying forward mines under the parapets. By the 18th December two

main shafts had been carried under the parapet of North Kikuan Fort to a length of 40 feet. Two large mines were fired at 2-30 p. m. that day and the Japanese assaulting columns instantly rushed forward. The Russian defenders however with machine guns kept them at bay for several hours. At 7-30 Lieutenant-General Samejima commanding the 11th Division personally led forward a half battalion of fresh troops and succeeded in effecting an entry; by 11 p.m the fort was in Japanese hands and all its defenders either bayonetted or driven out. This was the first of the permanent forts to fall. On the 28th December two mines were similarly fired under the north face of Ehrlung, killing a large number of the defenders. The Japanese instantly assaulted, but hand to hand fighting went on from 10 a.m. till 6 p.m. before the work was finally carried and the Japanese losses amounted to nearly 1,000, the whole Russian garrison having been under 500 in number, of whom few escaped.

At Sungshu the Japanese engineers determined to out-do the feats of their comrades at the other forts, and not only placed two mines under the parapet, but continued the gallery till they could place a large charge fairly under the magazines and the casemates in which the garrison were living. On the 30th these mines were fired\* and the terrific explosion killed or entombed a large number of the Russians, and the assaulting parties met with little resistance from the remainder of the garrison. Thus the third

permanent fort passed into Japanese hands.

On the 1st January the Japanese assaulted the work on Bodai and had all but carried it when the Russians blew it up, killing many of the attackers.

That afternoon General Stoessel sent a flag

of truce to General Nogi and proposed a conference to discuss terms of surrender. At 2 a.m. the next morning the Russians evacuated and blew up Kikuan East Battery, the middle one of the works of that name. "Q," "M," "N" and "R" works were also occupied by the Japanese during the course of the same night.

Throughout that day the negotiations for surrender continued and the same evening the capitulation was signed, and the great

siege came to an end, having lasted 148 days.

The Japanese losses during the siege are said to have amounted to the enormous total of 52,000 killed and wounded, and that of the Russians to 16,000.

At the capitulation 25,000 Russian officers and men of all ranks surrendered, in addition to 18,000 sick and wounded in hospital. Among the stores taken over by the Japanese were over 2½ million rounds of small arm ammunition, 546 guns of various calibres, with 82,000 shell, nearly 2,000 horses, very



<sup>\*</sup> From accounts seen subsequent to this lecture it appears that the explosion in the magazine and casemates which killed or entombed the defenders was accidental, and was probably caused by the discharge of the Japanese mines under the parapet.

large quantities of flour, barley, wheat, army biscuit, corned beef and other food-stuffs.

It appears therefore that the supplies of ammunitions of war and

Feasibility of further resistance of the fortress.

food were sufficient to permit of the defence being continued for a considerable time longer. The question therefore naturally arises whether the military situation was such as to

justify General Stoessel in surrendering when he did. It will be seen that although the outer line of works on the western face had fallen, the main line in that section, consisting principally of strong permanent works, with open ground in front which could be flanked by artillery fire from the powerful forts in the south, was still intact. There is no reason to suppose that the capture of these works would not have entailed on the Japanese efforts quite as great and costly as those required for the capture of the works in the Eastern Section. On the latter side also a second line of works had been begun, and had the will for further resistance existed, they could have been strengthened sufficiently to bar the further progress of the besiegers for some time longer. On the other hand, by the possession of the lofty Bodai hill on the north-east, and of 203-Metre Hill on the west, the Japanese could have shelled the town and dockyard, and caused great loss of life and property to the civilian population. This, however, cannot be held to be good reason for a commander to abandon the defence of a place if its retention fulfils any strategic end.

Possibly General Stoessel may have come to the conclusion that a further defence could serve no useful purpose. Kuropatkin and the main army had by that time been driven beyond the Sha-ho, and relief or assistance from that quarter were out of the question. The Port Arthur fleet had been destroyed, so its union with that of the Baltic was no longer possible. Under these circumstances he may have considered that the heavy loss to the garrison and civil population which further resistance would entail would not be justified.

Against these considerations must be set the fact that the defence of Port Arthur was neutralising a considerably superior force of Japanese, estimated to have amounted at this period to nearly 100,000 men, and preventing the latter from adding this number to the force arrayed against Kuropatkin, which they did the instant the capitulation took place. Also a warm water harbour was still a necessity to the Baltic fleet. In any case, whatever may be said on humanitarian or theoretical grounds for General Stoessel's decision to surrender, soldiers will find it impossible to condone the cession by a commander of a fortified place entrusted to him by his sovereign, unless he can show that neither excuse for prolonging the defence nor the slightest power of resistance remained. That his countrymen share this view is shown by the fact that he is now undergoing a term of confinement in a fortress awarded him by sentence of Court-martial.\*

<sup>\*</sup> The Court-martial sentenced him to death, which was commuted by the Czar to confinement in a fortress for ten years and loss of civil rights.

#### LESSONS OF THE SIEGE.

Time does not admit of more than a short notice of a few of the more general lessons to be derived from this siege. It is impossible to discuss, even briefly, any of the interesting questions which will naturally arise in the minds of soldiers concerning the tactics employed by the Japanese, such for instance as their reasons for selecting the lines of attack they adopted, or more technical questions regarding the design and siting of the defenders' works.

Considering that Port Arthur is the only regular siege that has

# Employment of heavy siege howitzers.

taken place under modern conditions, there is less than might have been expected in the way of novelty, either in the tactical

methods or among the armament and material employed. Probably the most noticeable feature is the employment by the Japanese of 11-inch howitzers, which are a good deal heavier than any piece of ordnance that had been employed by any nation outside a fortress. The heaviest pieces included in the siege trains of European powers up till lately have been 6-inch and 8-inch guns and howitzers, firing a projectile weighing from 100 to 180 lbs. and fortresses are generally not expected to have to resist anything heavier than these. The appearance on the scene of the 11-inch howitzers, dropping a 500 lbs. projectile at a high angle of descent, must have been exceedingly disconcerting to the defenders.

Effect of artillery fire on fortifications.

On the other hand we find that the Russian defences, after having been subjected to bombardment by these great pieces, till the forts had lost all resemblance to their original shapes and

the hillsides were pitted with great craters, were still capable of a most stubborn defence. We have seen how, after the besiegers' trenches had reached to within 50 yards of the defenders' works, and the latter had been thoroughly battered by artillery, three general assaults on the works of the Eastern Section were repulsed with loss. Even the temporary defences of 203-Metre Hill made a resistance that could hardly be surpassed by powerful permanent forts. appears that, although on masonry and concrete, and to exposed guns, these heavy projectiles inflict very great damage, yet on earthwork they have but little effect.

It is noticeable that among the armament on the Russian side

## Siting and organization of the artillery.

very few howitzers found a place. The fact, generally recognised for the last 12 or 15 years, that the high angle fire of howitzers

is more effective against earthworks and troops in trenches than the low trajectory fire of guns, does not seem to have been recognised by the Russian authorities responsible for the design of the defences. The consequence was that the defenders had no artillery capable of searching out the Japanese siege trenches at the shorter ranges. Moreover their guns were invariably mounted in extremely conspicuous situations, often on the summits of hills, and sometimes within the forts and temporary works for infantry. They were in fixed emplacements and could not be transferred to other sites to suit tactical requirements. The organization also of the Russian artillery, the control of its fire and the allotment of objectives, were all faulty. On the other hand the Japanese artillery, of which a considerable proportion consisted of howitzers, was well sited behind hills in concealed situations. The organization and arrangements for fire control were all excellent. Every gun was connected by telephone with its battery commander, thence to the artillery commander of each section of the attack, and ultimately to the G. O. C. Artillery. By this means fire could be concentrated at any time with entire precision on a given objective.

The result of course was that the besiegers easily established a complete preponderance in the artillery duel, the exposed Russian guns were quickly put out of action, often dismounted and buried in the ruins of their emplacements. Great damage was also entailed on the infantry works in which the guns were placed, and heavy and quite unnecessary losses to their garrisons. In the latter part of the siege the reply of the Russian guns to the Japanese bombardments was feeble in the extreme. The lessons to be drawn from this state

of affairs are obvious.

Another noticeable feature was the use of hand grenades and bombs. This is not a novelty, but a reversion, though in a form which the march of science has made many times more deadly.

to a weapon which was formerly in use for hundreds of years. When the besiegers had established trenches within 20 or 30 yards of those of the defenders, so that an attempt to fire over a parapet was followed by instant death, and a line of men climbing out of the trenches for an assault were swept away by machine gun fire, the only course for both sides was to remain behind their parapets and throw grenades into the hostile works. To keep these grenades out of their trenches the Japanese fixed up screens of wire netting which caught and threw them off. In repelling assaults too the Russians found that grenades thrown among the Japanese columns were very The besiegers also, as we have seen, prefaced their effective. assaults by firing bombs from their advanced trenches. For this purpose they devised light and portable mortars made of wood, weighing about 40 lbs. and throwing their projectiles from 100 to 400 The bombs were 5 inch and 7 inch calibre, weighing from 4½ lbs. upwards. The fire was not very accurate but the explosion was said to be terrific and the moral effect considerable: one or two bombs dropped or rolled into a trench always resulted in the defenders clearing out.

When men fight at close quarters, that is, from 100 yards to hand grips, rifles carrying two miles are no more effective than the muskets of our great-grandfathers, except that they can be loaded and fired quicker; and guns carrying five miles are not effective at all. In field operations the hostile forces seldom get so close together as the above, and when they do the episode is of short duration,

but in a siege men may have to live for days and weeks within a few yards of the foe. Special weapons for this form of warfare are therefore naturally evolved. The Japanese subsequently designed a light steel bomb mortar and organised a mortar corps from among their engineer troops.

Altogether the methods employed by the Japanese in the later

Similarity of Japanese siege works to those of old days.

stages of the siege were very similar to those of the Peninsular and Crimean sieges. Despite all changes in armaments man remains

the same and the earth remains the same, and in close quarter fighting these have a greater influence than weapons. The Japanese methods of sapping differed but little from those of the past; steel sap shields were used instead of sandbags or wicker rollers, and steel loophole shields were employed in the trenches. These are necessitated by the greater penetration of modern bullets. The excavation of trenches was carried almost entirely at night and even sapping work had to be confined to the hours of darkness. The mining and countermining operations showed little that is new; a man underground with a pick in the 20th century can do no more than his prototype did in the eighteenth.

The arrangements for the supply of ammunition and for the

Ammunition and supply arrangements of the besiegers.

transport of food, etc., to the trenches and siege batteries on the Japanese side were well thought out and organised. From the

rail-head, two or three miles in rear, a complete system of light tramways for man-haulage led to every section of the attacking lines, with branches to the vicinity of every battery; depôts also were formed in suitable places. Dalny with its excellent deep water harbour, with ample dock and wharf accommodation, its many buildings and good supplies of coal and water, formed an excellent base for the Japanese operations.

Obstacles, of which many miles were erected in front of the defence works, consisted in the great majority of cases of simple wire entanglement.

The wire used was always of the plain type, not barbed; the standards were somewhat flimsy, and often insecurely fixed in the ground owing to the hardness of the soil. Usually the entanglement was only one or two rows in depth. Notwithstanding its weakness however it proved a very effective impediment to the assaulting columns. Artillery fire, even with high explosive shell, was found to do it little injury. It was nearly always necessary to cut it by hand, special long handled wire cutters capable of severing it at one cut being employed for the purpose. The men employed on this duty were almost always killed.

The Russians tried a row of live electric wires as an obstacle at one time but they were a failure. The besiegers' bombardment caused breaks in the circuits which it was impossible to discover and repair. The rumours of the existence of live wires however undoubtedly caused some apprehension in the minds of the Japanese

soldiers. The effect on the defenders was even worse, as owing to the fear of them the outpost troops would often not venture to the front at night. When the attempt to keep it going was abandoned the fact was published to all regiments so that the outposts might be pushed out without fear.

Land mines or fougasses were laid by the Russians, but the records do not show any single instance of their having been effective.

Electric search-lights were employed by both sides. The Russians had six, arranged at intervals round their line of works. Some of them did good service in the repulse of the assualt on Bodai and "H" work on the night of 23rd-24th August, and on other occasions. The Japanese had only two search-lights, of which however they made very little use. There is no doubt that these adjuncts are of far less value to the attacking side than they are to the defenders. The Russians made some use of star shell when assaults were in progress, and these are said by some to have been more effective than search-lights.

The Japanese had a balloon section, but as an organisation it was in its infancy and it was not of great value. The defenders had no balloon, though the possession of one would have been of great advantage to them, as it would have enabled them to locate the positions behind hills and in sheltered valleys of the besiegers' camps and depôts, and of their howitzer batteries.

Broadly speaking, the principal lesson of the siege is to emphasise once more the necessity for sound organization, forethought and method, both on the side of the attack and the defence.

We learn from the Japanese as well as from the Russians that neither the most impetuous bravery in attack nor the most dogged resisting power in defence will compensate for lack of the above qualifications in the leadership. The methods adopted by the Japanese in the latter part of the siege were very different from those of the earlier portion. They too had to learn from personal experience the old lesson, that frontal attacks over open ground upon good troops in a fortified position have no prospects of success.

A field army, even when in an entrenched position has generally got a flank or other weak point against which operations may be directed. A fort-ress however has none, so the task of achieving penetration must be undertaken in a different manner and will turn out both harder and longer. There is no other method except by taking to earthwork, throwing up miles of trenches and approaching slowly, step by step, perhaps for months till the defenders parapets are gained. These operations require very scientific organisation and extreme patience on the part of the directing staff, and call for most strenuous labour and perseverance, endurance of privations and the highest forms of

courage on the part of the troops. Should all these qualities be possessed in an equal degree by the defenders the issue will not be decided except by starvation or exhaustion of materials and ammunition within the fortress, or by relief from external forces.

In the case under review subsequent accounts show that the necessary scientific methods, perseverance and unity, were utterly wanting among the majority of the higher leaders on the Russian

side. It is painful to dwell on the want of foresight prior to the investment, the counter-orders and disorders during the siege, the friction and jealousy among the generals, and the incompetence and ignorance of a number of those in high command, which the proceedings of the Stoessel Court-martial and other published accounts show to have existed. The unfortunate death on the 15th December of General Kondratenko, to whose inspiration and example the successful resistance up to that date seems in a large measure to have been due, appears to have taken the backbone out of the defence. Under such circumstances it is not strange that the victory rested with the other side.

It is impossible however to close even a short account of these

# Admirable qualities of the rank and file.

memorable events without a tribute to the admirable qualities displayed by the rank and file on both sides. The dash and gal-

lantry with which the Japanese infantry in the earlier phases advanced over the open to the assault of impregnable works, and pressed on despite appalling losses, is alone sufficient to call forth the admiration of all soldiers. But even higher qualities were displayed in the later stages, when thousands of men lived for a prolonged period in trenches only 40 or 50 yards from the enemy, continually exposed to rifle and shell fire and to grenades and bombs, constantly anticipating Russian sorties, ceaselessly at work pushing the sapheads nearer and nearer to the hostile works. When, after weeks perhaps of this nerve-destroying life, and after seeing whole companies of their comrades go forward to meet their death in vain assaults, they would themselves be called upon to do the same, the fact that they could be induced to follow their leaders at all proves that in the most valuable soldierly qualities no troops in the world can be their superiors.

But an equal meed of praise cannot be withheld from the brave Russian defenders. Brought thousands of miles from their homes, fighting in a cause, the particulars of which were probably unknown to them, not inspired to anything like the same degree as were their opponents by the example of their leaders, these indomitable men, crouching in their works under a hail of projectiles from the heaviest ordnance ever used in siege warfare, were not to be intimidated or affrighted, and were ready again and again to hurl back the assaulting columns from the very edge of their parapets. We may endeavour to conceive the feelings of the garrison of the permanent fort of Ehrlung on the day it finally fell. They had suffered assault

after assault, they had seen the great fort of N. Kikuan blown up by a Japanese mine, they knew that their foes were actively mining almost under their feet, and that any moment might see their shelter and themselves suffer the same fate; yet when the dread moment came and the mine was sprung, their shattered nerves did not impel them to fly, but they turned out and with bayonet, bullet and bomb kept the attackers at bay for many hours, taking a toll of two or three times their own number before the last defender was struck down. An army composed of men of this stamp, even if the higher leadership discloses grave defects, will ever be a most formidable opponent. We ourselves in our fight with them fifty odd years ago had experience of the stubbornness and endurance of the Russian Should the clash of national interests bring us into conflict with them again, we now know that the spirit of the men who fought under Todleben at Sebastopol is still living in their descendants, and that the task before us in such an eventuality will be as hard as any we have ever had to face.

# Other Names Hechimekiyama (J.) Niriusan (J.), Nº 3 Fort (R.) Shojusan (J.) Shojusan Covering Battery (J.) Riugen Redoubt (J.) Reilway Redoubt (R.) Red Redoubt (R.), Lungyen Red! (C.), Water Works Red! (L). Temple Redoubt (the northern une) (R.) Angle Hill (R.) Long Hill (R.) Flat Hill (R.) Royusan (J.) Chair Hill (C.), Nº 4 Fort (R.) Saddle Nill (C.)

..... Nº5 Fort (R.)

Photo.-Zinco., December, 1908.-- No. 4518-2000.



## BUSINESS PRINCIPLES IN MILITARY FINANCE.

BY CAPTAIN MARK SYNGE, SUPPLY AND TRANSPORT CORPS.

This paper is not intended to be a vindication of the policy which is sending a handful of officers periodically to the London School of Economics to give them an insight into business methods, but rather an attempt to follow the principle that underlies that policy to its logical conclusion. This principle is that an army along with other Government services is really a species of large business, and therefore should be treated as such, and—so to speak—run on business lines.

Hence at the School of Economics we were taught what is meant by "business lines" and how commercial undertakings are managed. We were taken through the mazes of book-keeping by double entry into the intricacies of a balance-sheet. We were shown that things are not always what they seem in an able course of lectures on statistics. We were taught how England is governed. We were taught the salutary lesson that a little knowledge of Commercial Law is a dangerous thing. Though we knew of bullion chiefly as the change for a five-pound note, yet we treated of it by the ship-load, and learnt much about 'gold-point' and foreign exchanges. Though we had no money to spare for a flutter, we were yet instructed in all the vagaries of the stock exchange: though we had none to deposit at our banks, yet we studied the banking systems. The traffic-working and the financing of railways, and the building, the docking, the chartering and the loading of merchant vessels (with one or two other subsidiary subjects) completed the course.

As we waded through these subjects we seemed to have left soldiering very far behind. We felt we were acquiring a certain general knowledge of affairs, but that seemed to be all. An anecdote may perhaps best illustrate our feelings.

On one occasion we were all introduced to Mr. Haldane, who asked us in turn in tête-â-tête conversations our views on the efficacy

of the course. One officer said:-

"I've only one complaint, Sir, against it. If I go out dining anywhere in London, the moment the ladies are out of the diningroom, the older men begin talking about the very things on which we have been lectured that morning. And the worst of it is they are so often wrong, and it is very hard not to put them right!"

Mr. Haldane said that this was the best recommendation he had hitherto heard for the Army Class at the School of Economics, and that he would quote it in defence, when he next was asked

adverse questions on the subject in Parliament.

The story is, I think, instructive, though not as indicating that the Secretary of State's sole object had been to give a few officers a somewhat liberal education in current affairs. This it did not indicate, but it showed how he regarded a knowledge of business

principles as naturally tending to produce a more intelligent attitude towards all public matters.

The reason for such a view is contained in that general principle stated above, that public affairs, the conduct of Armies, Navies. Civil Services, and the like, are really large businesses. An Army for instance, which takes £20 million yearly to maintain is analogous to a railway that turns over £20 million in one year. But such an army, huge concern as it is, is, it must be remembered, not really an independent business but only a branch business of the central Government.

This principle that the army is a business concern invites challenge.

"A business" you say "is a concern which is run for a profit. An army is a national expense run inevitably and perennially at a loss. There can be no analogy between such contrary concerns."

To this I answer:—

"A business is run for a profit, and an army should be run with two objects in view—efficiency and economy. But any extra efficiency or extra economy achieved over and above the average standard of efficiency and economy is not only equivalent to profit, but it is profit. It is just as much profit as is the excess of income over expenditure with which a company pays its dividends or which it re-invests in the business. Just as you judge the position of a business by the yearly earnings over and above expenses, so can you judge an army by its super-average achievements in efficiency and economy during a given period."

This may seem a hard saying. To talk glibly of the money value of efficiency may not seem practical. I must prove that it is practical. I can do this no better than by drawing up two simple balance sheets on ordinary commercial lines. The first shall be the balance sheet of a trading company, and the second of an army. I shall hope to show by this means how the same financial idea runs through the conduct of both concerns.

Here is the balance sheet of the trading company:-

Balance Sheet of X Co. 1st January 1910.

Liabilities.				Assets.		
Capital  Appropriation a/c (s profit for the year)	on a/c (sho	wing	£20,000,000	Sundry assets, viz., Prem Plant, Machinery, fixtu stock in hand, &c. Cash in hand at Bank	ures,	ses, res, £19,000,000 £25,00,000
	Total		£21,500,000	Total		£21,500 000

Let us be quite sure that we know what "liabilities" and "assets," etc., in a balance sheet really mean.

"Liabilities" are what the business owes to outsiders, the most important of such outsiders being the shareholders, or, in the case of a private firm, the partners as opposed to the managers (even though partners and managers are in reality often the same persons).

"Assets" are the property that represents or has been acquired with the capital invested, and that by use or turn-over is expected to yield a profit. Assets are thus whatever the business has purchased and created plus its cash in hand. Buried somewhere among the assets as they stand at the end of the period under review are the profits of that period, which appear more clearly on the liability side as due to the shareholders or proprietors. They are shown on the liability side of this balance sheet in an "appropriation account."

I should add here that I am assuming, for simplicity's sake, that on 1st January there were no debts due to or from the company, We thus are saved the trouble of including "Business debtors" among our assets, and "Business Creditors" among our liabilities.

I should also add that the total of the liabilities must always equal the total of the assets, since the profits expressly declared among the liabilities are also included among the assets, though not sorted out as such. To sum up the position represented by this balance sheet:—

X Co. with a capital of 20 millions has at the end of the year got 19 millions' worth of valuable material of different kinds, besides two and a half million of cash; thus not only has it made 7½ per cent. profit but it has got the necessary ready cash, to disburse even the whole of that profit, if required (though it probably will keep some in reserve), and a spare million besides (the latter million plus the 19 millions of other assets representing the capital originally invested).

Let us now construct our other balance sheet, that of an army.

To simplify matters I am not going to deal as in the last case with the assets already in possession of the concern, and the capital invested in it before the beginning of the year under review. do so would, in the case of the army of a European country, involve our tracing its history back into the early centuries of the Christian Such an army has gradually been built up throughout the We will take our army as we find it at the beginning of the year under review, regarding its already existing assets and liabilities as an established fact but outside our accounts. But at the beginning of the year we shall have found newly allotted to the army a certain sum (let us say £20 millions) with which we have been called upon to maintain the existing army in an average state of efficiency, it being considered on the basis of past experience, that £20 millions are an average price to pay for such maintenance. We are therefore solely concerned with the particular year under review. We in fact find that capital to the extent of £20 millions has been invested in our army for one year only and that it has to be returned to the country at the end of the year and preferably not in cash but in what we may call the maintenance of the army's efficiency\*. It is possible, if we use our funds and train and organise our army

<sup>\*</sup> For simplicity's sake I do not touch upon the possible expansion or reorganisation (on extensive lines) of an army, but only on its maintenance in status quo.



specially instead of moderately well, that we may be able to return to the country rather more than £20 millions' worth, whether in the form of savings effected or extra efficiency achieved, (that is to say, by dint of extra economy or extra efficiency or both). Such savings or extra efficiency will, as I have said, correspond to, and will in fact be equivalent to, profit on the investment. We shall have to work for this profit.

It is clear that it will be futile to sacrifice efficiency for economy. Efficiency has its money value just as much as have monetary savings. If, therefore, we effect savings at the expense of efficiency, we are not increasing our profits; we are merely handing back to Government part of its money in the form in which they advanced it to us, that is, in cash, instead of in the form in which they wanted it returned, that is, in efficiency. On the other hand, we must not aim at excessive efficiency, that is to say, at providing more efficiency than we have been given money to pay for. Government have decided what efficiency they need, and have given us the money with which to provide it and no more. If we provide more than this efficiency we must do so out of savings or out of extra skill, which is but a form of profits from assets. If we provide extra efficiency by extra expenditure, we are not merely spending more money than Government intended us to spend, but we are embarrassing them by converting contrary to their intentions, some of their liquid assests, i.e., their spare cash—into unrealisable assets, i.e., into commodities in the shape of superfluous military efficiency, which will be of no use to them in discharging their liabilities in other departments of their business. We must remember that after all the army is not an independent business but a branch business only, and the branch manager must not serve his own interests at the expense of the whole concern.

Let us now study the balance sheet of a specimen army:—

Balance Sheet of X Army, 1st April 1910.

Liabilities.		Assets.		
Army grant in budget for the year (Equivalent to Capital) (Extra efficiency ac-	£20,000,000	Maintenance and increase of the efficiency of the army throughout the year under heads of recruiting, training, physical fitness,		
quired by reappropriation of savings (a) { and by extra skill	£900,000	organisation, mobility, supplies, transport, ord-nance, etc.— (Equivalent to Sundry assets) £20,500,000		
Savings not reappro- priated	£600,000	(b) $\begin{cases} \text{Budget savings not} \\ \text{reappropriated} & £600,000 \\ \text{Budget lapses} & & £400,000 \end{cases}$		
Total	£21,500,000	Total 21,500,000		

<sup>(</sup>a) Equivalent to "Appropriation account."

<sup>(</sup>b) Equivalent to "Cash in hand or at bank,"



The balance sheet is the record of the following proceedings:—At the beginning of the financial year the army were allotted £20 millions for its year's expenses and had to achieve £20 millions' worth of maintained efficiency. They succeeded and more than succeeded, but not quite on the lines that it was intended they should succeed.

It will be observed that some of the projects which they had in view, and which were to have cost £400,000 were not proceeded The budget allotments for these projects therefore lansed. In these particular directions the army therefore failed in maintaining its efficiency (though without incurring any expense) and at the end of the year handed back to Government £400,000, instead of providing them with the assets, to produce which that sum of money had been advanced. But in other directions the army exceeded expectations both in the matter of economy and in that of efficiency to the total extent of £1,500,000. It spent some of its savings by reappropriating them to other projects. These reappropriations, together with savings not reappropriated and with certain extra efficiency produced by extra military skill, resulted we have seen in the creation of new assets worth £1,500,000. The assets thus created constitute the profit for the year. Therefore the total assets at the end of the year are worth £21,500,000 instead of 20 million as at the beginning. If the army had reappropriated all its savings, and not let the funds for some of its original projects lapse, the whole of this sum would have been converted into military assets, but since £400,000 lapsed, and £600,000 of savings were not reappropriated, £1 million remained in the form of cash, and the purely military assets (as opposed to cash) amounted only to £20,500,000 instead of to £21,500,000

The sum handed back to Government is, it must be remembered, not the same as the profit for the year. Government, unlike the shareholders of the trading company, take back at the end of the year all the cash in hand, that is the lapses and the non-reappropriated savings. The non-reappropriated savings are of course part of the profit, but it is not because they are profit, that Government take them back: they do so in order to close their account with their army at the end of the financial year.

The rest of the profit (£900,000) has already, so to speak, been re-invested in the business, for it has already been converted into military or non-realisable assets.

Such a view of military finance may serve to emphasise the truth of the dictum propounded at the School of Economics that the army is veritably a business. It specially makes us conscious of the fact that every military asset has its money value, and that it is not only when we are buying supplies or disbursing pay that we are engaged in a commercial or economic transaction, but also when we are organising, training and teaching. The efficiency of the Commander of a Division and the markmanship of the rifleman alike have their money value. They are both military assets, bought for a price, or acquired by paid labour.

Such a view may prove in some cases a stimulus to military zeal though it has its limitations. It may be said for instance:—

"Is not what you have told us merely a rather fanciful and at the same time redolently commercial way of saying that we all should do our best?"

This is so to some extent. The marksman, for instance, when on the range, had best think of holding his breath and such like matters rather than calculate the monetary value to the state of his 'possible.' But the commercial point of view is assuredly the correct one in all questions that have a directly financial bearing when they come up for decision. Such matters are more frequent than one is inclined to think, and the officers concerned with them are not so closely confined to the supply branches of the service as is often imagined.

The modern attitude of political economists to their subject is to regard it as merely a branch of, and strictly auxiliary to the larger science of human welfare. But at the same time paradoxical though it may appear the more strictly they adopt this attitude the more clearly do they realise that human welfare cannot be independent of economic considerations, that it is, in fact, mainly an asset to be bought for a price. So, too, in the narrower sphere of military welfare.

Therefore it is often necessary in matters that concern military welfare to think commercially. It is as hard often for an office to do so as it is for the little Englander to "think imperially." It is not because the former is the careless extravagant hero of fiction, but for a much duller reason. It is because he is so often trained to think officially, to the exclusion of other considerations. He must of course give official considerations their due weight, for he is an officer, and a component part of an official machine. His mind, however, if trained to think commercially as well as officially, will be a greater factor in the achievement of military economy and efficiency.

I propose, in order to illustrate these somewhat abstract remarks to take two instances, imaginary ones, but at the same time quite imaginable—in which we shall follow the workings of an officer's brain, both when thinking commercially, and also when thinking officially, and shall notice the contrast in the results.

Suppose an officer to be in command of mounted troops and at the same time to be possessed officially of considerable financial powers. Suppose that it has been deemed advisable (for the sake of economy) to crush the grain for the horses by machine power instead of by hand. Enquiries have been set on foot as to what is the best machine to buy. Particulars concerning two rival machines are placed before the officer and he is asked to decide between them. The particulars give several details as to price, out-turn, etc., and show that the machines crush the grain as well as, besides more cheaply than, hand labour, but the details are not altogether complete.

The officer 'thinking commercially' will scrutinise the details, and realise their incompleteness in their present form. He will

order a comparative estimate to be made showing in the case of each machine:—

- (a) its initial cost;
- (b) its estimated life;
- (c) its cost in use per maund of corn crushed;

(d) the cost of interest on capital laid out in purchase, until the machine has paid for itself in savings over hand labour.

The estimates will be furnished to him, and it will become apparent that the initially more expensive machine, valued at Rs. 250 will in the end prove emphatically cheaper than the other, which can be bought for Rs. 150. He decides on the former.

Now suppose the officer to be thinking officially only (to the subconscious subordination of commercial considerations); he will note the data concerning both machines. He will see that either is an improvement on hand-labour. He will then ask for the case to be presented to him from the point of view of official (as opposed to commercial) finance. A learned clerk will arrive, carrying a file and some books of regulations. It will transpire that, though the price of either machine is within the officer's financial powers, yet he has no funds at his disposal for the particular object, and that therefore, if he spends upon it more than Rs. 200, it will be necessary to go through the formality of applying to the Controller of Military Accounts for re-appropriation of the necessary funds.

"That settles it" says the officer (and few would blame him)

"get the cheaper machine which only costs Rs. 150."

Now let us suppose, as our second instance, that an officer holding a command is called upon to express an opinion whether a loaf having 'kissing' crust, instead of real crust, on both its long sides, but costing 10 per cent. less than the loaf at present issued to troops can with advantage to the State be substituted for the latter. It is pointed out that the British soldier is fond of his crust, and that 'kissing' crust is less efficacious than real crust in keeping a loaf from getting stale between meals in warm weather; on the other hand 10 per cent. of the sum expended per year on soldiers' bread amount to a handsome figure.

Let us deal first in this case with the purely officially-minded officer. He will probably consider the predilections of the men of his own regiment more than anything (if he is of an indulgent nature) and advise against the new loaf. If he is not indulgently inclined, or is constitutionally bent on economy (in the narrow obvious sense) he will be in favour of the change. There will not in fact be any strong official considerations that he can think of to guide him in the matter, and thus he will be thrown back upon his own personal instincts for guidance. His decision may be the correct one (whichever way he decides), but if it is correct, it is so purely by chance.

"Thinking commercially" an officer would argue as follows:—

"This is a question between economy and efficiency. Both of these are assets. It only remains to decide whether allowing for the effect of diet on the morale of troops, the new loaf is good enough to play the part assigned to bread in turning out the soldier of standard efficiency. If it is, then we can save the money, instead of wasting it on an unnecessarily expensive article, and spend it on something else for the army or hand it back to Government. If it is not good enough, then by adopting it we should only be detracting from the due efficiency of one of our military assets for the sake of another that is no more important, or for the mere sake of hoarding money at the expense of other assets."

Upon these lines a few experiments, and a medical opinion would soon guide him to a decision. It, too, might be a wrong one, for the matter is complicated, but it is more likely to be right than the

non-commercial or purely official decision.

I have purposely taken these instances from among such situations as any combatant officer may find himself in at any time, in order to emphasise the fact that the settlement of problems that have a direct bearing on military finance is often an integral part of the work of the typical regimental or staff officer and that therefore he too should learn to "think commercially". To take instances from the supply services seems therefore unnecessary. If we have shown that to think commercially is of an advantage to a combatant officer, à fortiori it must be of still greater advantage to the supply officer, whose work largely consists in actual trading. As a matter of fact the constant need of such thinking of itself to a large extent produces the habit. The work of a supply service is no bad school of business training. But it cannot be an ideal school, as its range of business experience is limited to certain directions. It seems to need some supplementing. Of course a few officers are Dick Whittingtons born with a genius for finance, and others, possessing a genius for private study, can teach themselves any thing they have a mind to learn, but others again are duller witted and having a natural gift neither for finance nor for self-tuition, seem to need a special training, such as the School of Economics affords, to open their minds more widely to the general principles of business.

That a merely empirical business training, in any but the widest spheres of business, is bound to fail in the teaching of general business principles, may be instanced in many ways. I will take

but one instance.

An idea prevails amongst many intelligent and business-like officers that when you are dealing with Government money, it is never necessary to consider the possibility of its bearing interest. The old notion of the economic hopelessness of a purely spending department is perhaps at the bottom of this idea. The Government is an old woman with a hoard of coin in a stocking, and the Army is a spendthrift son. When the son wants cash, he comes to his mother who reluctantly parts with a bit of her hoard. The idea of the productiveness of money is thus entirely absent from their minds.

This defective notion in the minds of such officers may at times

produce undesirable practical results, if not corrected,



I have known an officer argue somewhat as follows:—"If Government will give us a lakh with which to build an airtight storeroom for perishable stores, we shall save Rs. 10,000 deterioration a year, and so in ten years shall have paid for the storeroom."

"What about the interest on the capital outlay?" asks a

dissenter.

"Pooh! Government aren't like a business: they don't want

interest on their money."

They may not ask for it from their army in so many words, but they want it all the same. From where, in the first place do they get their cash (this hoard in the stocking, into which the spendthrift son goes dipping)? It comes from three possible sources—

(a) Loans.

(b) Profits on Government trading.

(c) Revenue acquired by taxation.

Now suppose that that lakh of rupees came out of a Government loan, Government would of course have to be paying interest on it Suppose it came from the profits of a State Railway. If Government had not built a storeroom with it, they could have re-invested the money in the State Railway, where it would have borne interest. Suppose it came from other revenue. It then represents a lakh of taxation. If that lakh had not been drawn from the country, the country would have been a lakh richer, that is to say, the country's trade would have had a lakh more invested in it, and bearing interest.

It will therefore be apparent that whenever a Government spends any money on their Army, they are taking that money away from somewhere where it would either be saving or bearing interest. A Government, like any other business, must keep some of its money idle or almost idle to meet the current expenses of running the business. The yearly upkeep of the Army is in this sense one of the current expenses of Government business. To defray such expenses the Government keep a certain amount of "cash at the bank," i.e., assignments at Government treasuries, but they have no more wish than any other financier to keep more money idle at the bank than is absolutely necessary to meet immediate demands. Moreover, the Government like any other business balance their books yearly. Current expenses are therefore those expenses which are necessary for carrying on the business for that year. Now if you spend a lakh on a lasting improvement, it is clear that this is not one of the current expenses of that particular year. In so far as it tended to a profit or saving in that particular year, it might be regarded as a current expense to be set against gross profit, but in so far as it is intended to result in future profits or savings, it is not an expense of the year but is an investment, which like all investments is expected to yield interest to the investor. We have seen that the Government could perhaps have earned 4 per cent. interest on that lakh if they had invested it in a State Railway instead of in an air-tight storeroom, or by making no such investment at all could

have saved themselves from borrowing a lakh at 4 per cent. investment in the air-tight storeroom therefore owes the Government 4 per cent. interest, since it has debarred Government from making or saving 4 per cent. in other ways. Therefore, when you find that the lakh laid out over that storeroom saves 10 per cent. of a lakh a year through reduced deterioration of stores, you must not say that your net savings on the undertaking are the same amount, for you must deduct from them those 4 per cent. which you owe to the Government for foregoing the making or saving of 4 per centin other directions. Your net savings will in fact be 6 per cent. not 10 per cent, and it will take some years longer than you first imagined to pay for the storeroom out of savings.

As one pursues such trains of thought one realises more and more clearly the commercial nexus which binds all Government services together, and how the economic interests of one branch of service can never be judged apart from those of the others. How to weigh these interests against one another when they conflict is the task of Governments and not of soldiers, but even so the soldier can learn something that may be useful to him by contemplating the difficulties of such tasks. He can get a broader outlook, and a truer economic sense. Take for instance such a proposal as the doubling of 50 miles of State Railway near a menaced frontier. The railway man says "We can't do it; the cost of construction and subsequent maintenance is too great in comparison with the estimated increase of traffic: it can never pay." The soldier says "We must have it done for economic as well as strategic reasons: we can save by it in personnel, for if our frontier can be made more accessible and our frontier garrisons reduced accordingly, we can place more men in the reserve and keep fewer with the colours: we can save by it too in material for instead of maintaining costly store-houses and granaries at the rail-head (the contents of which deteriorate at great loss for want of turnover, and at the best are so much capital unprofitably locked up) we can, if we have a double line to convey our material to the front without congestion of traffic, refrain from buying that material till we are ready to consume it, and in the meantime release capital from costly stagnation and also save deterioration."

Who is to decide between two such points of view? Not the soldier, not the railway man, but the central Government. On what lines will they decide! On the broad lines of general policy, but at the same time on commercial lines, for it must be remembered that nearly every policy however intangible its object involves a liability to finance it, and requires an asset to redeem it. That asset may be something solid, something saleable in the market at a definite price, or it may be the attainment of a mere physical condition, of an intellectual or moral quality, of an abstract conception, saleable in no market but tied up for ever in the destinies of the country.

### THE TRAINING OF INFANTRY AND USE OF SCOUTS.

By LT.-Col. J. H. duB. Travers, 2nd South Wales Borderers.

# Preliminary.

I need waste no words, I am sure, as to the first importance of accurate and early information in all military operations, or how smokeless powder and long range guns have intensified this.

My remarks are confined to what I might call one of the most humble methods in this great question of obtaining information, the

training of the Infantry Scout.

These remarks are not altogether original, as I was present at a lecture given by Colonel Carter, then A. Q. M. G. of Salisbury Plain Division in 1904, from which I gathered many hints. I have read many pamphlets and have obtained as much information as possible from officers interested in the question. The conclusions arrived at are now adduced for what they are worth.

The first question that will be asked is "Of what use is the In-

fantry Scout at all !

We will be told that scouting should be done by Cavalry, by Mounted Infantry, and by the Intelligence Department, making full

use of the native of the country.

If we go round and collect the opinions of Commanding Officers of Battalions they will be, I think, anything but favourable to the Infantry Scout; the almost unanimous opinion will be "We cannot trust the information they bring in." "They do more harm than good." In one pamphlet I read "A Commanding Officer would hesitate to accept the uncorroborated statement of a N.-C. O. or man"

It is unfortunate that there is this opinion, though it may often be based on experience, because it makes the C. O. by no means willing that his best men should be taken and trained in work for which he believes the man is not fitted.

I say at once if you cannot get a reliable man whom you can trust it is useless going to the trouble and wasting the time on his training. But I hold that in every battalion there are reliable men

fitted by nature for a scout's duty.

That these men can be trained by careful teaching to become of great use to the battalion in which they serve, and to the army in general, is my firm belief. Again, it is sometimes said that there is no necessity for a highly trained scout in an Infantry battalion, all that is wanted are "Ground Scouts," who are sent out, as a custom, before or as a battalion deploys for attack; but a regiment or company may be acting alone on detachment and require to be kept informed of the state of affairs for miles round and so

may have to trust to themselves entirely, how useful then would a highly trained scout become—so I say "Aim at the highest"

perfection."

Further, the training of a scout, if we look no further, tends to develop those faculties of individualism, self-reliance, and endurance which lie latent in a man, and which the authorities now urge on those entrusted with the training of the soldier to develop to the utmost.

The training alone of a scout, if properly carried out, is of immense value, and one which no C. O., having the highest efficiency

of his battalion in view, can afford to dispense with.

Infantry Training lays down that at least one man per squad and one N.-C. O. from each company should receive special training as scouts; and further, scouts of several companies may be combined in one body under a selected officer for special purposes.

Now we all know that such a collection of scouts suddenly put together, without previous training as a body, would not give the best results. Companies train their men differently, not all officers are fitted for the giving of such instruction; Company Officers are constantly changing, and the necessary time is not available.

I think the usual custom adopted by most Company Officers is to class their scouts with their N.-C. O.s and put them through the special training laid down in Infantry Training. But is this training

sufficient to make a properly trained scout?

Emphatically " No."

If you want a body of efficiently trained scouts in a battalion

you must train and exercise them regimentally.

Allowing then that regimental training is necessary, the next thing to do is to select an officer as instructor. Let him be the best you can get, for on him depends the whole efficiency of your scouts; it is a grand chance for a keen, energetic and intelligent subaltern. Say to him "There are your men, take them for a couple of months and train them as scouts." But do not forget that such instructor's work is most irksome, that no officer will be able to do justice to it unless he is given a free hand and relieved from all regimental duties during the course. Give him every chance and expect great things from him in return.

As to the selection of the men, this must be very carefully done no doubt; in the first place they might be taken from the Company Scouts, but should not be confined to them, only those likely to make good scouts should be selected; it is pain and grief to even try and train a man who has no aptitude for the work, nothing will ever be made of him and he delays the work for the others. Such men should be cast at once, and the earlier they are recognised and marked down the better.

There is often a difficulty in getting hold of the best men; "So-and-so cannot be taken because he is an employed man"; but once a man is trained his employment need not stand in his way; on the contrary, why should it not be possible to reserve some of

the regimental employments for the good and efficient scout, the man who deserves well of his battalion; it is not feasible to pay scouts, but it may often lie in the power of the C. O. to give such rewards.

Employed men further attend a certain number of parades, what better than a scouting exercise instead. Let the class be small; so much individual attention is required that this becomes a necessity; and let the men be volunteers for the work.

The instruction must be SOUND, METHODICAL and PROGRESSIVE. I have thought out and drawn up a course, being largely guided by Colonel Carter's \* ideas on the subject. This can of course only be a guide, but I hope it may serve as a basis on which those so desirous may build up a course of instruction suited to the necessities of those they have to teach.

The first point is to get a clear conception of what scouts

should be taught.

We may best answer this by asking, "What are scouts used for?", and what information is, or may be, required from them—as regards the Enemy, his Position, Disposition, Strength, Composition, Movements.

As regards the ground—Best ground to advance over, Obstacles, Cover. He must, if possible, obtain his information without being seen by the enemy, and must intelligently transmit it back to his own troops as soon as possible. He must understand all the arts of making himself invisible and know or be able to judge the sounds and sights which reveal the presence of the enemy.

He must be taught night work, and, to a certain degree, sketching; and, finally, it is sometimes useful and necessary to use scouts collectively for one purpose or another, and they must receive

practice in so doing.

The matter of the Guidance of Troops should not be overlooked. A very good instance of their use in this latter respect would be, I think, in the attack on a position by night in the manner lately practised at QUETTA and POONA as the covering party to the digging This, however, does not come in during the individual training and is a matter for after consideration. If the scouts are good individually, there is little fear that they will not be good collectively.

These points should be borne in mind and the training arranged

accordingly.

As to the qualifications a man should possess to become a good

Scout, You will find them laid down in most pamphlets, they are—
NATURAL:—Pluck, Sobriety, Self-reliance, Discretion, Activity, Quick Intelligence, Good Physique, Good Eye-sight, Good Hearing, Eye for Country. It is not contended that any man should possess such Qualifications in a high degree, and no doubt many of them can be taught but all can be improved by teaching.

<sup>\*</sup> The Training and Use of Scouts by Colonel T. C. Carter.



The ACQUIRED qualifications desirable are put down as:—Reading, Writing and Arithmetic, Swimming, Riding, Cycling, Signalling, Reporting, Marksmanship, Judging Distance, Tracking, Telegraphy, and, if possible, Languages. (Again it is not contended that a man need possess all these, they are given as a guide.) It is essential that some kind of standard of education be insisted on, it is impossible to take a man, for instance, who cannot write or do simple calculations. I think a man also should be a 1st class shot, and I regard it as essential that a man, before being taken for training as a scout, should possess some knowledge of signalling in addition to semaphore. This latter is not the province of the Scout Officer Instructor to teach, but should be undertaken by the Regimental Signalling Instructors. None of the fast work that is required by the Regimental Signallers need be insisted on; all that is required is a working knowledge, for an Infantry Scout cannot move about in the same way as his mounted comrade, and there is therefore great need to insist on a thorough working knowledge of this means of transmitting information.

As to the actual duration of the course of instruction there is a considerable difference of opinion. I have heard it said that the course should run to 6 months, 9 months, one year, and even two years; that it is impossible to make a good scout within these periods out of the raw material. I do not agree with this, I allow the longer a man has practised the better and better he becomes, and I admit he will be learning all the time. We can never cease learning in the art of Scouting, any more than we can in any other military work, but I discriminate between the actual course and the constant practice the scout should afterwards receive. I think the course should be such as to thoroughly ground a man in his work, to teach him the principles which underlie the work, and the reasons for acting as he does. should aim at giving the man a thorough working knowledge of a scout's work, and then let constant practice, when the man is able to work alone and constant individual supervision is no more necessary, perfect him.

I have divided the course into FOUR CYCLES.

As to the time necessary to be spent on each, this must be left to the time available; a two months' course ought to be sufficient to teach all that is required, it is possible even to do much in a month, under that the time will not be sufficient for any practical purpose. I can see no reason why the class should not occupy the same length of time as a company does in its training—36 working days, the men so trained to be excused their company training:—

1st Cycle ... SIMPLE MAP READING.
USE OF WATCH AND COMPASS.
WHAT TO REPORT.
HOW TO REPORT.

Begin indoors on Map Reading: teach the class the conventional signs, tell them how to distinguish between a Railway line and a Road, a Town and a Forest, etc.; teach them the use of Simple Scales, and how to measure distances, explain the Magnetic Varia-

tion, the use of the Compass and Watch, and the simple methods of ascertaining the approximate "True North"; pass on to Contours and explain the difference between a Valley and a Hill, and demonstrate in the open air, with a map of the country, how these things are, how to set a map, etc.

Next as to reporting:—

How to word, number, date and time their reports, state from whom it comes and to whom it is sent, not only explain but see that they clearly understand the reasons for this and explain how the neglect may render their report useless or worse.

Teach them the points they should note, TOPOGRAPHICAL and

with reference to the ENEMY.

Abstain from reporting on things ALREADY KNOWN or SHOWN on MAP; tell them always to put themselves in the position of the officer or other to whom they are making the report and to ask themselves whether it would convey to him the impression they wish. Keep to the points ordered to be reported on.

Reports FACTS not FANCIES.

Word your REPORT like TELEGRAMS, says General Baden Powell, not a word too much or too little.

A little information QUICKLY sent in is worth more than much sent in Too LATE.

Colonel Carter, in his pamphlet, makes a wonderfully good suggestion for indoor work to teach reporting.

## Sketch on Black Board.

(Showing-Valley, River, Hills, Railway Bridges, Fords, Roads Tracks, Villages, Towns, Native Huts, Church, Cultivation, and Trees, a Scout shown in foreground behind cover, so that he can see over the ground.) Tell the class that Scout Thomas Jones started from "A," 6 miles "S" at a certain time and let them write a topographical report on all they see. They will write their message wrong at first, writing is bad, paras. not numbered, names of places not printed, no date, place or time, possibly they will forget to sign. This can be continued until all are perfect and the writing of an intelligent message comes easily to them. You can vary this by placing pieces of paper on the sketch on which are drawn conventional signs representing troops; the class can be taught how to report on troops. This method of teaching the class the rudiments of reporting whilst sitting before a black-board is most effective and saves the Instructor an immense amount of time. I believe a sound grounding on these subjects-Map Reading and Reporting-are essential. Mistakes in these are of such constant occurrence and carry such penalties, that it is good to see that the class thoroughly understands them before proceeding further; indeed it is not too much to say that nearly all troubles come from the neglect of one or the other of these and the Instructor will find it a great nuisance to have to hark back in his teaching when he discovers the lack of true appreciation.



The next Cycle I put down as:—

FINDING WAY ACROSS COUNTRY.

2nd Cycle ... TOPOGRAPHICAL REPORT.
VERBAL REPORT.
ROAD, RAILWAY AND RIVER REPORTS.
MEMORY REPORT.

Some Night work.

In this teach the class the value of the map, put in practice, what they have learnt before, take a map and draw a line on it along a route well defined by natural features or points that are easily recognisable on the ground, let the scout take the map in his hand and walk along this route quickly, not deviating from the correct course. Make the route harder by drawing the line over country more difficult to recognise; afterwards give them more extended exercise in getting from place to place.

Send your men out to make a topographical report of an area. Let your men always have the best maps of the country you can get hold of such as they may be expected to get on service; give your men their orders as to their work sometimes verbally, sometimes in writing; leave out, purposely, at times some information which should have been afforded them and see whether they ask for it, sometimes give it, sometimes withhold it altogether to see how they adopt themselves to circumstances: let this system run through all your teaching. Send them out without pencils or note-books (or get some one to steal it out of their haversacks) and see what information they retain in their memory and compare it with the notes they have made; send them out without sufficient time to take notes and make them report verbally.

Make them report from memory on country traversed when ignorant that any report would be asked of them, so as to teach them to keep eyes and ears always open. Teach them the prominent points of ROAD, RAILWAY and RIVER reporting from a military point of view.

Then as to Night work during this cycle, scouts of all others must be carefully trained in this and should never lose themselves at night, so work as much of this as possible into their course. Teach them how to march on a "BEARING," how to use the STARS on dark nights, how to use well defined natural or artificial features. Remember they may be often wanted to act as GUIDES, give them exercises to report on ground by day, to select the best route and then make them follow it by night; do not rest till they can do the whole thing by themselves; try if it can be arranged with a company (at Field Training) to guide the company with one of the class by night.

The 3rd Cycle I put down as:-

3rd Cycle ... COVERING AND RECONNOITRING TROOPS AND SENDING BACK INFORMATION.
REPORTING ON TROOPS.
OUTPOST WORK.
DEDUCTIONS FROM SOUNDS BY NIGHT.

One of the difficulties of Scout Training is to get troops to report on under service conditions; during the time companies are in camp at the conclusion of their Field Training, is an opportunity not to be lost. The Instructor can always have his scouts playing about these camps, they afford by day and night endless possibilities which should be eagerly seized.

Let the Instructor set his class definite reconnoiting exercise such as—A Position, A Camp, A Detached Post, A Signalling Post, etc.; he can send his men in pairs or groups of four each with a definite part of, say, a Position to report on, to find out the best way of

attacking it, cover up to it, etc.

Make them report on troops in the field, Manœuvring, Marching, in Camp, etc.; make them occasionally report on what the men were doing, send them into a camp, to get past the Outpost, to report the strength employed on Outpost, dispositions and exact position of each body.

During this cycle let scouts oppose one another, one side stationary, the other moving or both sides moving, let them try and get through each other's lines without being seen whilst gathering in-

formation of their opponents.

Again let night work become prominent during this cycle. Teach the men how to take in, to classify, and draw deductions from sounds by day and night, let the scout lie down close to a camp or a sentry on a dark night, and learn to draw deductions from the sounds that reach him, and how to locate them.

The 4th Cycle I conclude the training with is:—

4th Cycle ... { SKETCHING. TRACKING.

I think it is an open question whether it is necessary to teach an Infantry Scout Military Sketching at all unless he exhibits a natural aptitude for it. I think it unnecessary so long as he thoroughly understands and can read a map, but I certainly think he should be trained in eye sketching; it is easily taught and of the utmost use and will sometimes save an immense amount of reporting and there

can be no mistaking the meaning.

Tracking is a subject in which the Instructor will invariably find the greatest amount of interest manifested; I think here is an occasion in which we of the British Regiments might appeal for instructors to Indian Regiments. We have all sorts of ground around most Indian stations which afford excellent opportunities for teaching the rudiments of this accomplishment. Show the class the difference between a man's, a horse's, mule's, camel's, bullock's, tracks, walking, running, trotting, and cantering. Teach them to recognise the Government shoe on a horse, the Military boot, etc., etc. I have not the time to go into the opportunities that must occur Major General Baden Powell has much about it in his book.

Under this heading, too, I include the drawing deductions from marks on the ground, signs in the air, etc. Tent marks (or bivouac),

birds circling in the air, a cloud of dust, etc.

Natives cook in small fire places, the smoke from them can be seen rising over the whole camp, whilst that of a European Regiment is confined to a certain place.

Measure the line occupied by the transport animals in a vacated camp and estimate their numbers, etc., etc. The sense of

smell properly trained conveys much.

The Instructor will find the old scout, as he progresses, will have many such methods treasured up in his memory, which he has gained by practical experience, encourage him in it. Let him talk with his scouts going to and returning from their work when he gets the chance, he can help them much and gain experience himself by so doing.

In these cycles I have mentioned only an outline of work. The work should of course be continuous if possible, and there should be no hard-and-fast line drawn between any of the cycles, the work of one being continued in the next and running through the whole, the work in each succeeding cycle being regarded as extra,

over and above that which has gone before.

A foot soldier as a scout is naturally at a disadvantage over a mounted man except in mountainous or over difficult country. It is sometimes possible however for the Infantry Scout to get a mule to carry him, and I see in the Service papers an announcement that four bicycles per battalion have been allotted in England for scouting purposes; possibly this may apply to India also, but I think myself that the best means of transmitting intelligence is by means of signalling. This should be continually practised all through the course; scouts should back to one another and pass on the necessary information, arrangements for so doing being made according to the job on hand.

Let the Instructor impress, again and again, on his class throughout the course the necessity for getting back information quickly in time to be made use of. If they cannot do it one way they must

try another.

To sum up, teach your scouts:-

- (1) THE WAY TO OBTAIN INFORMATION.
- (2) How to draw up a report or message conveying shortly, clearly and correctly the information gained.
- (3) How to convey the information gained, quickly, so that it can be made use of.

After the course is finished an examination will be held by the C. O. This should be of a searching nature and embrace all the work the scout has been taught. Those that pass satisfactorily become entitled to wear the Regimental Scout's Badge.

# Organisation and Equipment.

The organisation of scouts is, I think, one that we must not dogmatise about. Major Spearman in his pamphlet\* lays particular

<sup>\*</sup> Infantry Scouting by Major A. T. Spearman, Royal Warwickshire Regiment.

stress on the organisation of the scouts of a company and of a battalion.

He divides scouts into groups of four, two such groups to be furnished from each company; he lays down very carefully and fully the particular duties of each individual of these groups, 1, 2, 3, and a group leader. As to the method of extension and manner of transmitting intelligence he makes them carry flags of a size that can be distinguished up to 400 yards so as to ensure scouts keeping not more than this distance apart.

When scouts are extended covering the battalion and the groups are not all required for actual scouting, the remainder are

told off as "support scouts."

While I cannot take upon myself to say that such an organisation is wrong, I can say I do not agree with it and for the following reasons:-

> (1) I believe that a given number of good scouts will quickly find out the best methods of working together, and that these methods will vary with the nature of the ground

and the particular job they have in hand.

(2) I think it a very unwise thing that a properly trained scout (one that has been trained regimentally and individually) should be given any hard-and-fast rules and regulations as to his distance and formations: it will invariably be found that men pay more attention to these than to their scouting.

(3) Scouting is NOT Skirmishing. The absolute freedom it is necessary to allow the individual in the former contrasts with certain rules and regulations which have to be

followed and observed in the latter.

(4) Primarily the rôle of scouts is to obtain Information, and only in rare cases to effer resistance and then for a definite purpose for which ordinary troops cannot be used.

I agree that scouts should work together in pairs or groups of four, but I deprecate any fixed organisation on hard-and-fast rules.

As to his equipment:—

This is a matter of rupees chiefly, but if you expect good work from a scout equip him well.

Watch, Compass, Field Glass (the latter say to each group of

four), and Note-book.

For his clothing let it be such that will give him freedom of action, his belts and straps the lightest possible, let him carry a rifle with a small number of rounds (20) and two large signalling flags.

Give him a pith Tent Club helmet to protect him from the

sun, and rope soles to his boots.

#### General.

The following general remarks may prove useful to scouts:-Have confidence in yourself.

Act for yourself but not with rashness or foolhardiness.

Be Independent.

Let nothing escape your notice.

Keep hidden.

Select the best route in moving from one place to another.

Cross open country QUICKLY.

Don't choose too conspicuous a place for concealment.

Avoid skyline.

Study ways of enemy as a shikari studies the habits of the game he desires to shoot.

Avoid movement when in enemy's view.

If you detect enemy do not let him know you have done so.

Study background and see it harmonises with your clothes.

Note land-marks or prominent features.

Pick up what information you can from the INHABITANTS.

Be constantly looking back to notice how COUNTRY looks to GUIDE YOU ON YOUR RETURN journey.

Always see there is more than one way out of a tight place before you enter it.

The glisten in the sun of a GUN BARREL is most noticeable and often gives you away.

At night keep in low ground so that enemy may show up on SKYLINE.

Always be sure you understand your orders.

Practice JUDGING DISTANCE, heights of mountains, hills, width of rivers, depth of nullahs.

Be able to estimate accurately the distance you have travelled.

BE BOLD, yet CUNNING and SLY.

Keep your BODY and FACULTIES FIT.

Remember how much may DEPEND on the INFORMATION you OBTAIN and TRANSMIT.

Avoid villages and barking dogs.

Capture but do not fight the ENEMY.

Remember to look out all round you.

Learn how to COOK and SLEEP in OPEN, but NEVER LIGHT FIRES if by SO DOING you may BETRAY your situation.

BE CAREFUL of the WATER YOU DRINK.

Train yourself to wake up at ANY HOUR of the NIGHT.

Learn to TIE up a SIMPLE wound.

# The Use of Scouts.

It will be seen from what I have said before that I am not in favour of getting together a large body of Regimental scouts, but that I rather advocate a small and select number.

There is, of course, in this no wish to disagree with Infantry Training on the subject as to what is laid down for the training of Company scouts. What I seek to advocate is the higher training of a certain number of men to be designated "Regimental Scouts." I have made it a point that such highly trained men should receive notice in one way or another from the regimental authorities; if a

large body of scouts is maintained it means that they are probably not so efficient and the Commanding Officer will find all the more difficulty in helping them.

If from 8 to 12 men can be got together thoroughly trained, it would in my opinion be ample. In the case of a larger number of men being required the Company Scouts could be used under these

men.

One of the greatest difficulties to be contended against in keeping up an efficient body of scouts in a battalion is, I think, to be found in the fact that they are not made use of. For the most part they are used when a battalion is about to make an attack on a position or is marching from one point to another. Very rarely do you ever see battalion scouts sent out some considerable time beforehand to gather information, to reconnoitre the position or to find the

best route in order to guide the troops, etc., etc.

This surely should not be. The scouts are not being afforded a chance of proving their usefulness or the battalion of attacking in the best way or making the most of the ground; one thing is very certain: according to the extent to which scouts are used in a battalion by so much will they become efficient and, I believe, render the results of the training of the battalion of more worth. Being a highly trained man, use him as such, his use is not in the firing line, husband him for a future occasion. Don't, in barracks, worry him with unnecessary fatigues; you cannot expect a man to undergo all the discomforts and fatigues, consequent on being a scout, and then treat him no better than the other men.

Encourage him to go shooting. Let officers who are going on a shooting trip take a scout with them, if they so wish; he might be of much use and the experience gained by him would be of great worth.

More latitude should, I think, be allowed at manœuvres for the employment of the Infantry scout as an individual, and sometimes collectively, especially at night. Surely it is the best method of training to send out a man or a small party to obtain some definite information and one for which I maintain a properly trained Infantry scout is well fitted.

The difficulty of information obtained wrongly could, I think, be easily overcome by transmitting all such to the Umpires in the first place. They would decide as to how much, if any, of the information was rightly obtained and allow only that much to pass on.

### SAFETY AT NIGHT IN FRONTIER WARFARE.

BY CAPT. G. R. P. WHEATLEY, 27TH LIGHT CAVALRY.

There were many lessons deduced from the South African War, some of which have already been duly learnt; others, subsequent discredited as inapplicable except in special cases; whilst others have been forgotten. The conditions of South African warfare were peculiar to the country, but there is one thing common to all countries and all ages, and that is the setting of the sun and, for roughly 14 nights of the month, consequent darkness. This condition of darkness gives rise to a feeling of insecurity, and if the enemy is on a lower military plane the advantage lies with him. Bodies of the enemy, knowing the ground, seeing in the dark better than their more civilised adversary, feeling their way almost by instinct, wearing no boots but moving noiselessly on bare feet or in grass shoes, can collect silently at a named spot ready for a rush on the slumbering

In South Africa in the early stages of the war darkness favoured the Boers inasmuch as their commandos, less encumbered with food supplies than our own columns and composed of men to whom darkness does not mean complete blindness, were able to make strategic and tactical night movements. But in the block-house, wire and drive stage of the war, darkness became almost indispensable to a Boer's existence. He had to break through somewhere. To meet these night movements there arose on our part the necessity for providing some kind of automatic alarm, which would both give notice of the approach of an enemy and at the same time give a light by which he could be shot. In the block-house line which guarded the railways and obstructed the Boer's movements, and in small posts, guarding depôts, etc., liable to be raided by any wandering commando hailing from nowhere and bound for nowhere in particular (except perhaps Ceylon and Bellary did they but know it), in both these parts of our military system trip wire flare lights were improvised. The Manual of Military Engineering, 1905, page 47, mentions one which is presumably the best evolved, and it can only be described as clumsy, besides being entirely dependent on the presence of materials not always available on the spot, and certainly too heavy to carry with a moving force.

So clumsy is it that only in a standing camp would it ever be constructed and then probably only after the absolute necessity for something of the sort had been demonstrated by events. To produce a light at a distant spot at will an instantaneous fuze would of course be a very efficient device, but fuzes are not and cannot be carried in such quantities as to warrant their acceptance as the recognised method of producing the light required.

Here in India on the frontier we have had ample demonstration of the disadvantages under which a civilised force labours at night specially in mountainous country. Our camps in frontier expeditions have been of the type known as perimeter camps, surrounded with a breastwork and possibly with obstacles in addition. As a protection against "sniping" as far as possible all places are piquetted which the gentle Afridi suffering from insomnia would naturally choose as favourable sites from which to fire into the camp during the night. These piquets amounted to as many as 12, besides 6 supports in one case (Wano, 3rd November 1894), and although placed as a protection against sniping, are also used to watch likely lines of approach by which the camp might be rushed. Patrolling has been found to be a failure. (Official despatch.—It had been found that patrolling at night was useless owing to the noise made by our men moving over the stony ground which indicated their positions and rendered them liable to be surprised and cut off by small parties).

The piquets are not expected to do more than resist the approach of small bodies and give notice of the approach of large ones. (Official despatch.—"To have had all piquets strong enough to offer resistance to an attack in force would have made night duty fall very heavy.") In spite of these precautions, on two occasions at least our camps may fairly be said to have been surprised. I refer to the camp at Palosin Kach, 22nd April 1860, and to the camp at Wano, 3rd November 1894. At Palosin Kach (I quote the official despatch) piquets in the line of attack were overpowered and nearly destroyed \* \* the camp was alarmed by a volley fired by the rear piquet and the call to fall in \* \* 500 of the bravest of the enemy dashed into the camp \* \* the attack was chiefly successful where the mounted levies were placed \* \* the part of the camp attacked was at first thrown into great confusion \* \*

At Wano, 1894. Official despatch.—"The whole camp was suddenly aroused by hearing three shots \* \* \* and at the same instant a desperate mob of some 500 fanatics made a rush straight into the camp. So rapid was the rush that before the Gurkhas, although already accountered, could get out of their tents, the leading men had penetrated into their camp • • but so dark was the night that friend was undistinguishable from foe at even two or three paces. It appears that under cover of this darkness the enemy had approached the camp from the west along the two large ravines. Emerging from there the main body rushed past Nos. 9 and 10 piquets. In the latter which was held by 7 men, 3 were killed and the others after firing 3 shots made their escape. It was these shots which gave the first alarm of the enemy's approach orders were given for the guns to fire star-shell to light up the ground where the enemy had collected, and this enabled the infantry to get in several volleys,"

Enough has been quoted to demonstrate the need of some arrangement by which (1) the enemy's approach may be automatically signalled, and the intruders fired on if necessary, and (2) the ground over which the attack comes being lighted up at will with-

out having to quit the camp in order to do so.

The apparatus required must be above all things absolutely simple and perfectly reliable. It must also be light and portable. Hitherto the nearest approach to the above (short of search-lights) is in India an arrangement by which a weighted arm working on a pivot is made to fall when required (either by means of a trip wire or a pull wire) on to a paper cylinder filled with a composition of chlorate of potash and sugar surrounding a glass tube containing sulphuric acid. This paper tube is supported at each end on the edge of a metal cup filled with the same composition as surrounds the glass tube. The fall of the weighted arm breaks the glass tube and the sulphuric acid acting on the composition causes a flare giving sufficient light by which to shoot the unfortunate tripper. Connected with a pull wire of considerable length the flare can be set so as to set light to an artificial light such as "Light illuminating wreck" or any other device, or failing any of these to a bonfire sprinkled with The degree and duration of the light are not, however, under discussion; but the method of igniting it when and where required is important. This apparatus must be pronounced as failing in several essentials. The weighted lever is clumsy. It may not fall with sufficient force to break the glass tube inside the paper cylinder. It may not be accurately centered and may cause the cylinder to jump off the metal cup without breaking. The attachment for releasing the arm may be badly set. The paper containing the composition surrounding the tube may and probably would break in transit and be found empty when wanted. If a glass tube were to break in transit inside the paper and composition the result would be an explosion most probably owing to the confined space in which combustion occurred. Again if the ingredients be carried separately each paper cylinder has to be filled and set on each occasion. What is required is a simple and efficient means for bringing the sulphuric acid into contact at the right moment with the composition, and at the same time the apparatus should admit of the composition being carried in a non-explosive and non-inflammable state and yet when required for use must be quickly and easily placed in position.

Such an apparatus was produced and tried practically recently

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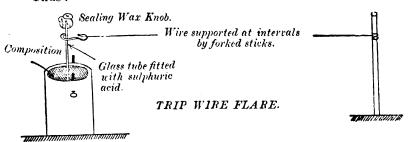
The sulphuric acid glass tubes of the former apparatus are retained and can be carried (as was done by cavalry on recent mancuvres) packed in sawdust. An accidental breakage is immaterial as the sawdust soaks up the little acid contained in the broken tube. Exclusive of wire, the apparatus required for each flare consists of glass tubes ready filled and sealed, the two ingredients carried separately; and a bamboo cylinder about 6 inches long;



about 2 inches from one end of the cylinder a nail is driven through The composition is poured in from the palm of the hand, and one of the glass tubes placed upright inside leaning against the nail. One end of a wire is hooked over the upright glass tube and the other end of the wire fastened to a peg about 60 yards distant.



Thus:



A sowar who helped in the preliminary experiments has in subsequent trials set both trip and pull wires for these flares without failure, mixing the ingredients of the composition on the palm of the hand and pouring it into the bamboo Thement twice advanced at night over ground prepared with four trip flares and three pull flares. On each occasion every trip duly gave away the scouts, and the bonfires ignited by this means effectually showed up the firing line behind. The effect of four fires distributed over a front of about 320 yards was to light up a considerable area of ground in front and rear of the trip wires.

The battalion, their night attack being no longer in the nature of a surprise, was given the order to charge, and presented a very good target. Charging on they reached the line of pull flares which being pulled by the defenders lighted bonfires at distances varying from 150 to 180 yards from the perimeter of the supposed The relative positions of the trips and pull flares come under the heading of tactics and need not be discussed here. pull wire can be worked at almost any distance provided that arrangements are made to prevent the wire catching en route on corners of rocks, boulders, trees, roots, bushes, etc., Several obvious ways of doing this naturally suggest themselves.

To revert to the case of a frontier camp, e.g., Wano. Suppose each unit, i.e., regiment, battery or squadron, which may find itself on the perimeter, equipped with one mule load consisting on one side of a box containing "sugar" in which is packed sulphuric acid tubes wrapped in sawdust packets. On the other side of the mule a box containing chlorate of potash and a supply of bamboo cylinders ready for use; also two dozen tent-pegs. The unit now only requires wire (or its substitute) and wire nippers. Imagine every piquet furnished by each unit protecting itself by a line of trip wires at a suitable distance to its front; and the ravines which it was found impossible to picquet similarly prepared with a line of trips. Surprise now seems impossible. Trip flares may be placed close together so that a scout going forward in the hope of letting off a flare, and so drawing the piquet's teeth so to speak, would be shot at a range of 150 yards, but he would only have let off one flare. Each piquet can have a pull flare or two in addition, against the organised rush as opposed to stray scouts. Imagine each unit also preparing "pull" bonfires sprinkled with oil, at places on which they would wish to bring a fire to bear in case of an attack. The light of the fires so prepared by each unit would collectively light up the whole of the field of fire when ignited by means of the pull flares.

## A COMBINED WEAPON AND INTRENCHING TOOL.

By Capt. F. R. Lee, Upper Burma Vol. Rifles.

In a review of the article by "Mea" in the July 1908 number of the Journal of the United Service Institution, the Pioneer revives the suggestion that British troops should carry the Kukri as part of their equipment. The real need for some handy implement combining weapon and intrenching tool is evident from the articles by Mea, from the opposite remarks in the *Pioneer* as well as from the fact that during the last Burmese War many British Officers did supplement their equipment by carrying the Kukri. Its advantages were found to be many. The Pioneer well enumerates Among others it says that "It can be used as an entrenching implement in an emergency, and light cover when the soil is favourable can be rapidly thrown up with it, and it is specially adapted to use while lying down." With reservations I agree with this, but hope to be allowed to describe another weapon even more handy and useful than the Kukri. By some who had used the latter in Burma I was told that its shape was awkward in the hands of Europeans, the inside cutting edge was difficult to use effectively and the small handle with its projecting ring, though giving a good grip, tended to cramp and blister the hand. For these reasons several rejected the Kukri for a Burmese Dah. Thinking over this and recognising the need of some handy tool for camp and jungle use, I devised a weapon which I believe unites all the advantages of the Kukri with others added, and with none of its defects. The idea of combining a weapon and entrenching tool arose from seeing Kachins using their dah. As a cutting weapon it is superior to the Kukri, having greater length and therefore greater leverage. The handle likewise is so convenient and so graceful that it is adapted in the new implement. The top of the Kachin Dah is squared and is habitually used as a spade. In fact it is an ideal light intrenching tool and a terrible fighting weapon, defective only in lacking a point and a hand guard. Could the advantage of the Kukri and the Kachin Dah be combined so as to unite weapon, pick, and spade in one compact instrument? That was the problem: here is a sketch of the tool I devised. Length of blade 18 inches, length of handle including guard 51 inches, greatest width of blade 5 inches. Like the Kukri one edge only is sharpened. On the back is a serviceable The blade is so weighed that the centre of percussion is 6 inches from the point. As a protection to the hand in a fight and an assistance to the grip while digging, the sword is fitted with a strong guard; this will serve as a rifle rest while firing.

Being made of tough manganese steel, the point forms a strong pick, and the broad blade such an efficient shovel that while lying prone a soldier can in 15 minutes make a shelter trench and a bullet

proof mound in any but the hardest soil. At medium ranges the steel blade is impenetrable by a bullet and can be used in emergencies as a shield. To facilitate the grip while digging, both edges are smooth to a distance of 4 inches above the guard. The peculiar shape of the handle and pommel has been evolved by the Kachins as being most adapted for digging. The whole weapon is longer and broader than the average Kukri, and this extra length gives reach for fighting and the extra leverage so necessary in a cutting and excavating tool. The cutting angle is almost as great as that of the Kukri and being less awkwardly placed requires no special knack to apply it. Pace the opinion quoted above, the Kukri is not a convenient The blade is too narrow and the curve from point digging tool. to pommel makes it lopsided when used as a spade, which requires the main rib to lie centrally over the cutting edge. This curve of the Kukri precludes the use of the point for thrusting, so that in this respect also the composite implement is superior to the weapon of the Ghurkas. The tool-weapon is most conveniently worn, hung on the right side of the belt behind the ammunition pouches, to balance the bayonet. The weight as designed is 23 ounces, but if this be considered too heavy the blade could be shortened without losing much leverage. A reduced model 12 inches long makes a strong and useful hunting knife. The flaps of the sheath are closed by three brass studs. Trial has shown these to be more easily opened and shut than straps or hooks, with no sacrifice of security. An universal tool is almost as difficult to design as a machine possessing universal motion, but I am convinced that the weapon in question would be a useful adjunct to a soldier's equipment. It embodies, let me repeat:—

1. A sword with point, cutting edge and hand guard.

2. A saw.

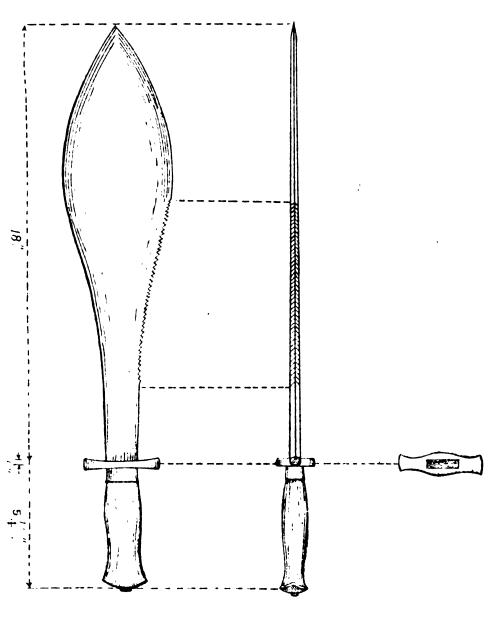
3. An entrenching shovel.

4. A pick.

5. A rifle rest.

6. A bullet shield.

As to the shape (if custom and heredity count at all) it is more convenient for European hands than that of the Kukri. The latter is similar to the Kottie of the Greeks of which Quintus Curtius says "Copidas Vocant gladios leviter curvatos falcibus similes." Moplahs of the Malabar Coast used a knife of this form, see Lassen "Indische Alterthumskunde," vol. 4, p. 225. Lord Egerton of Tatton in his valuable manual, figures a south Indian sword of this shape from his own collection. The Yataghan of Circassia is the most The Greeks adapted it after Alexanwestern type of the weapon. der's expedition, but both among them and elsewhere in Europe, it was abandoned in favour of the leaf-shaped blade. Had the Kukri type been in accordance with the instincts of the swordsman of the West it would have survived. The "bill" used in the middle ages by English soldiers in conjunction with the bow was not a short weapon but a bill hook fastened to a long handle like a halbert. See British Museum, Cotton MS. Julius E W.



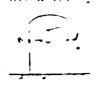
Tool.

Tool Sideview.

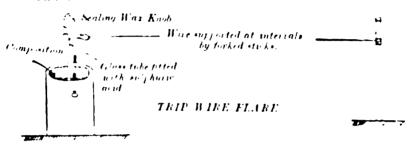
Guard.



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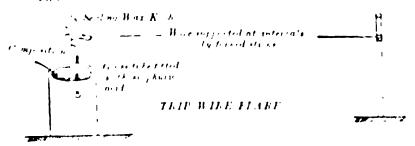


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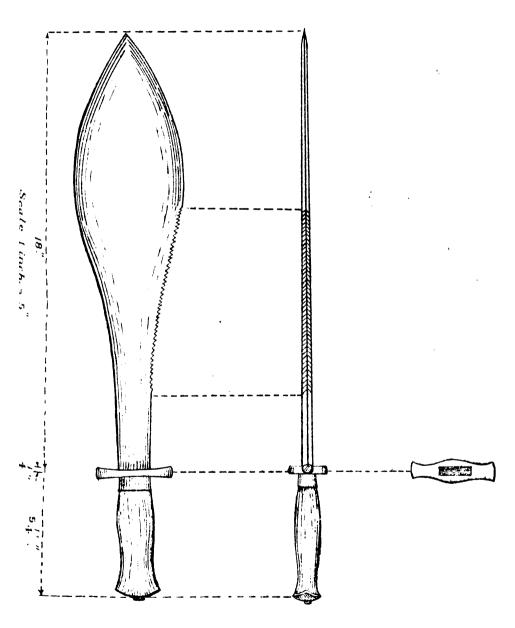
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- 3. An entrenching shovel
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- 6 A ballet shield

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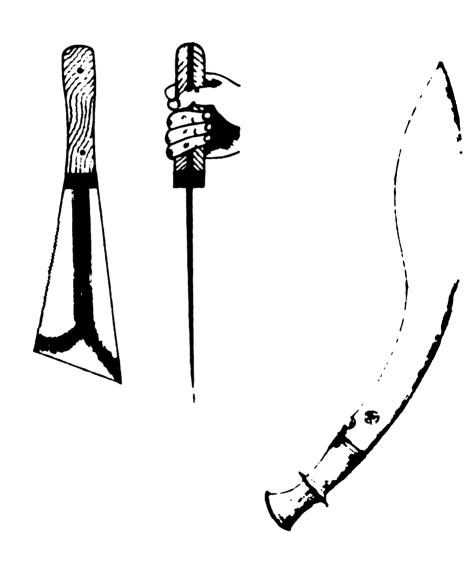
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# HASTY ENTRENCHIE



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### A HASTY ENTRENCHING TOOL.

#### By THAKUR.

An article entitled "The value of a personal entrenching implement" by Mea appeared in the July number 172 of this Journal. In this article as well as in the 2nd Gold Medal Essay of 1907 the writers make various suggestions as to the proper tool that every foot soldier should carry on his person to enable him to bury himself rapidly while lying down under fire. The Germans also appear to be hunting round for a portable light implement in spite of the very heavy weight already carried by their men.

Two years ago I made experiments with various kinds of light digging tools and finally came to the conclusion that the common native "Kurpi," with slight improvements, is the best light entrenching tool so far as our Native Infantry is concerned. I had a few samples made and issued to my sepoys. Very little if any practice was required to make the men thoroughly acquainted with the full uses of the tool and they appeared well pleased with having this

handy little weapon on their person.

So far so good, but I found that the men on manœuvres required in addition to a "digger" something with which they could cut down brushwood and small branches of trees to hide their newly made trenches (or rather the excavated earth) and if possible a wirecutter. The rough drawings herewith are made from a tool which combines all these requirements, viz., digging, cutting and sawing. It answers all these purposes perfectly. The "digging edge" (guillotine) is shaped so as to give it the maximum of digging powers and the clongated edge is made strong enough to penetrate into very hard or stony ground. The tool will cut through any amount of brushwood with surprising ease and the saw, a very fine one, will saw through wire (of wire entanglements) in five seconds.

The implement can also be put to various other uses such as "making" chulus or field kitchens, digging trenches round tent

d'abris in wet weather, chopping up firewood, etc., etc.

My men found the tool caused them no inconvenience whatsoever owing to its lightness and small weight (about 1½ lb). It is carried in a frog attached to the waist belt on the right side behind the ammunition pouch.

Messrs Burn & Co., Howrah, who perfected my ideas are the

patentees.

#### REVIEWS.

"The Wilderness, Spotsylvania and Cold Harbour," being extracts from "Battles and Leaders of the Civil War." Published by Messrs. Hugh Rees, Ltd. Price 7s. 6d.

This volume, one of the latest additions to the already voluminous literature dealing with the American War of Secession, owes its appearance to the enterprise of the publishers, who, with the view of assisting candidates for the forthcoming Home Staff College and promotion examinations, obtained permission from the Century Co. of New York, the publishers of the complete work "Battles and Leaders of the Civil War," to reproduce the portions of that work dealing with Grant's Campaign in Virginia in May and June 1864.

Those who have studied the complete work will realise the value of these extracts, dealing with this particular campaign; but to those who have not and are in doubt as to what authorities they should consult, it may be explained that the present volume consists of a series of independent accounts, written by officers of either side, of the more important battles and episodes of this campaign.

The accounts are given exactly as written by the commanders and others concerned, and the result is that one obtains, not only a very vivid account of this or that action, but also a clear exposition of the reasons which induced the commanders to act in this or that manner, information which is of far greater value to the student of military history than any mere narrative of actual facts.

There is a certain amount of extraneous matter which seems somewhat foreign to the purpose of the book, e.g., detailed lists of the troops engaged on either side or the story of how General So-and-So met his death, information which may possibly be of interest but is not of any particular value to the student. But, notwithstanding a certain amount of this "padding," as it seems to be, the book is on the whole extremely instructive and very readable.

The several accounts are written, for the most part, by prominent leaders or staff officers of either side, the authors including Generals Grant, Beauregard, Butler, Law and other high commanders, from which it will be patent that the information given as to plans of campaign and reasons for action cannot be otherwise than authoritative and reliable.

For example, the first chapter of all—"Preparing for the Campaigns of 64"—is from the pen of General Grant and consists of a masterly "Appreciation of the Situation," as we should call it, from the Federal point of view, which is not only intensely interesting but full of valuable instruction. The advantage of hearing both sides cannot be over-estimated, as in this way we are given a far clearer and juster view of the important events of the campaign and the strategy that led up to them than any historian could give us, however impartial or well-informed he might be,

The book is profusely illustrated with reproductions of sketches and photographs taken at the time and also contains excellent maps of the localities concerned.

"Landscape Sketching for Military purpose," by Captain A. F. U. Green, R.G.A. Price 4s. 6d. Publishers:—Messrs. Hugh Rees, Ltd.

Of all the subjects in which the British officer of to-day is expected to make himself proficient, Landscape Sketching, possibly, to all but the few, seems the most difficult and hopeless. The man who has no idea of how to represent on paper the thing that he sees is apt to be alarmed and quite helpless at the idea of tackling anything like a landscape and usually has not the vaguest idea of how to set about it.

It is for such man, primarily, and not for the favoured few who know how to use their pencils or pens, that the author has written this excellent little book. No one, however ignorant of the subject, could read it through, carefully studying the sketches given as examples, without having a very much clearer idea both of what was expected of him and of how to set about it. The official text-books as the writer declares, deal very superficially with the subject and are "wanting in elementary instruction to non-artists." I quote from the author. It is just this elementary instruction which he tries to give and succeeds in giving to a very considerable extent. The difficult parts, such as the theory and rules of perspective, which prove a stumbling block to so many, are described very simply, without the use of any technical terms, and should be understandable by any one of average intelligence.

The chapter on "Equipment," i.e, what sketching materials are needed, is very sound and based on experience. The final chapter dealing with a subject set in Staff College and other examinations and intended principally as a help to the prospective examinee, describes how to draw paperames from mans and vice versal.

describes how to draw panoramas from maps and rice versâ.

It is a book well worth getting by all officers, whether for examination purposes or to increase their knowledge of a most important branch of military learning.

"Staff Rides and Regimental Tours," by Colonel R. C. B. Haking. "Price 8s. 6d. Publishers:—Messrs. Hugh Rees, Ltd.

The name of the author of this most useful and instructive book is well known to many, as he was a Professor at the Home Staff College some few years ago, in which capacity he had much experience of preparing schemes for and directing Staff Rides. Consequently he speaks from experience of the best methods of arranging this most useful form of exercise. Comparatively few officers realise, unless they have had to do it, what an amount of trouble and labour is involved in preparing a realistic scheme for a Staff Ride, whether at home or in India, and how difficult it is to find suitable ground. Both to those who may have to prepare such a scheme or direct the

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ride and to those who may have to take part in one, this book should prove invaluable. Even for the comparatively junior officer, who is not likely to take part in one for some time, there is much that is both useful and interesting in it. The latter part, especially, dealing with Regimental Tours and tactical Exercises without Troops, is just as important for the regimental as for the staff officer.

The writer commences by explaining what a good many do not clearly understand, viz., the difference between a Staff Ride and a Regimental Tour. In his opinion, only senior and staff officers should take part in the first; regimental officers below the rank of Lieut.-Colonel should preferably be exercised in Regimental Tours only, as the work on a Staff Ride is of a much wider and more advanced nature.

The whole subject of preparing for and directing a Staff Ride is then dealt with in extenso, excellent examples being given of country suitable to this or that scheme. The writer explains that there are two ways of preparing a scheme: either inventing your scheme to suit the ground at your disposal, which is perhaps the better method, or taking a campaign from history and finding ground to suit it. Several chapters are devoted to "The Preparation of the Scheme" and every detail is explained most carefully and thoroughly. In fact, every part of the work of instructors and instructed is dealt with.

The second part of the work, dealing with Tactical Exercises and Regimental Tour, is equally good and contains a great deal of useful information, as well as many excellent examples, which might serve as models for many different schemes. Another chapter is devoted to "One Day Exercises," i.e., those which can be carried out near the quarters of the officers taking part, without any expense

being involved.

The last chapter deals with "War Courses," a term not often heard in India. The author explains that the War Course is very much the same as a Regimental Tour, but is under the direction of the Brigade or Divisional Commander instead of a Regimental Commander and is principally for the purpose of instructing and not only practising officers in strategy and tactics.

There are several good small scale maps to illustrate the problems given, contained in a pocket at the end of the book, which

materially assist the reader.

A most instructive and valuable book for officers of any rank.

"Some Notes on the Service for Young Officers and others," by Major G. R. Talbot. Price 6d. Publishers:--Messrs. Forster, Groom & Co.

This little book should be in the hands of every young officer on first joining the service. It contains a great deal of useful information which an officer is expected to know as soon as he joins and of which many a youngster is lamentably ignorant.

The organisation of the Army is treated briefly but clearly in the first part, then follow notes on Distinctions, Badges, Precedence, etc., of the various branches and corps of the British Army. Little, however, is said about the Indian Army, as the book is primarily intended for the subaltern who is joining his regiment for the first time; some notes on the organisation and composition of the Indian Army might perhaps be added with advantage.

In conclusion some useful hints are given as to behaviour on parade and in Mess, especially towards senior officers, which many

junior subalterns would do well to follow.

As an appendix some of the most important dates in Military History are given, which every officer should know.

A book, on the whole, containing much useful information on many points, concerning which not only junior subalterns are ignorant.

"Questions on the Konique Campaign in 1866," by Lieut.-Colonel H. M. E. Brunker. Price 1s. Publishers:—Messrs. Forster, Groom & Co.

This little brochure consists of 50 questions on this campaign, without answers, and is apparently designed to assist the intending examinee by showing him what kind of questions to expect in an examination on it. The first eight are those which were actually set for the Staff College Entrance Examination in August 1897; the rest are modelled on the same line.

The only fault to be found, if any there be, is that some of the questions seem a little too wide in their scope to be given in an examination, e.g., the following:—"Comment on the action of the different arms, Cavalry, Artillery, Engineers and Infantry during the Campaign—both on the march and in action." One can very well conceive that a candidate in an examination might have some difficulty in knowing how to answer such a question, which practically embraces the whole of the tactics employed on both sides by each arm.

Still, the secondary object of the book being—what it undoubtedly is—to teach the prospective candidate how to study the campaign, it is safe to say that that object has been gained. No one could go carefully through all these questions, looking up the answers to them, without having a very complete and thorough knowledge of the campaign in question.

"Notes on Magnetism and Electricity," by J. S. Iredell, A.S.C. Price 3s. 6d. Published by Messrs. Gale and Polden, Ltd.

It is an extremely difficult thing, even in these days of popular science manuals, to find works on technical subjects which will be understandable by the man of average intelligence who has had no previous training or instruction in them. Especially is this the case with Magnetism and Electricity, which are so incomprehensible to the non-expert, who has not learnt even the rudiments of the subject as a boy and suddenly finds himself, on being detailed to go through a Signalling Course, expected to grasp sufficient of the theory of

Electricity and Magnetism to enable him to understand Telegraphy and Telephony. It is for such men, whether Officers or Non-Commissioned Officers, that the book under review has been written.

The author states in the preface that "it has been taken for granted that the reader knows nothing of his subject to start with and that it will not present difficulties to any Officer or Non-Commissioned Officer attending a Signalling Course." The latter surmise is possibly rather too sanguine, as in places the writer makes use of terms and expressions, without explaining them, which the non-expert could hardly be expected to understand. For any one, however, who is at the same time having a certain amount of practical instruction, there should be no difficulty whatever.

The book is divided into two parts: Magnetism and Electricity, and the theory of each is explained as simply as possible. The principles of Telegraphy and Telephony are dealt with, especial attention being paid to the latter; the various instruments and apparatus, including the different types of battery and cell in common use, are described with the aid of very good diagrams and in as few words as possible, the advantages and disadvantages of

each type being given clearly and succinctly.

On the whole, it is a well-written and helpful little book of only 110 pages of large print, illustrated with excellent diagrams, and should supply a want and help men to pass examinations. The instructor, too, will probably find it of use in enabling him to explain a thing more clearly and simply, perhaps, than he has been able to do previously.

"Weapon," by B. E. Sergeant. Price 2s 6d. Published by

Messrs. Hugh Rees, Ltd.

The title of this little book is somewhat misleading unless one looks at the secondary title, which explains exactly what it is—"A Brief Discourse on Hand Weapons other than Firearms." Unless the reader notices the words italicised, he may possibly be somewhat disappointed, as he may have expected a treatise on firearms. However, being what it is, the book is a most fascinating one and the reader will find it hard to put down when once begun.

It is divided into four sections, viz., "Weapons for Stunning," "Weapons for Cutting," "Weapons for Thrusting or Stabbing" and "Miscellaneous Weapons." Each class of weapon is described shortly, its history is given and the particular object it was intended to serve is briefly explained. Perhaps the most interesting parts, from the soldier's point of view, are those dealing with the evolution of the modern sword and lance: the bayonet, being an accessory of the firearm, is only treated in brief.

The book is illustrated copiously with actual photographs of the weapons described, most of which were taken in the Royal United Service Museum, of which the author is Assistant Curator and consequently one of the greatest living authorities on Hand Weapons

It should be of interest to all soldiers, even though the amount of useful information to be gathered from it may be small.

"Tactical Notes for D1," by Captain R. Martin, Royal Irish Regiment. Price 1s. 6d. Published by Messrs. Forster, Groom & Co., Ltd.

This is a small book for the pocket, designed, as the title shows, to assist officers in passing their examinations for promotion. It does not profess to contain any new or original information, but is a compilation of Combined Training, Infantry Training, the Manual of Field Fortification and other official publications giving the most salient points of their instructions on various heads. These heads are arranged in alphabetical order, to facilitate reference, and the idea is a good one.

There is a large amount of information in the book, which the author has been at some pains to collect from the various sources available and it is put in a clear and succinct form; unfortunately in some cases it is not to be found under the heading where it is expected and the headings are not as clearly distinguished as they might be. Except for these failings, which would seem to be due merely to careless proof-reading, the book is sound and well up to date and should certainly help officers for their promotion examinations. It would be a handy book of reference for every officer to have constantly by him, whether in cantonments or at manœuvres, and would be particularly useful to officers carrying out the Field Training of their Companies or Double Companies.

One excellent feature is that at intervals throughout the book a series of questions and answers is given on the subject just dealt with, thus enabling the reader to test his knowledge of what he has read.

It is written in a very simple style and should be of use to the N.-C O. as well as to the officer, as there is nothing in it of an advanced nature or difficult of comprehension by a fairly intelligent man.

"Guide to Army Signalling," by Ronald L Q. Henriques The Queen's Regiment. Price 1s. Publishers:—Messrs. Gale and Polden, Ltd.

The system of aiding both instructor and pupil in any subject by means of a book of questions and answers dealing with that subject, is one that is seen very frequently now a days and is certainly of great assistance to both, provided the subject is such that definite answers in few words can be given to the questions. Army Signalling is, undoubtedly, such a subject and the small book now under review is a very excellent example of the system.

Practically every branch of Signalling is dealt with and all the most likely questions which an Inspecting Officer might ask are given, with short and concise answers. As the writer states in the preface, they have been set entirely from the soldier's point of view and are therefore put in very plain and simple language.

Not the least useful portions of the book are the last two sections, dealing with the "Prismatic Compass" and "Map Reading and Setting." These two subjects are apt to prove rather a stumbling block to a more or less uneducated man and the instructor often finds some difficulty in explaining things to him; with this little book to help him, he should find no difficulty.

Although it is written primarily for the soldier or N.-C. O., the officer also, who is going to a Signalling Class, might learn a good deal from it. Certainly, if he were able to answer correctly all the questions given here, he would have a very fair knowledge of his subject, though, of course, he must have practice also, and no book can teach a man how to send or read a message quickly and

accurately.

It is a book which might with advantage be translated into Hindustani for the benefit of the Native Army Signaller, who, as a rule, if good in practice, is somewhat weak in theory, owing to his difficulty in understanding the meaning of what he learns.

We have to acknowledge the receipt of the following publicacations from Hugh Rees & Co., Limited:—

I.—Tactical Principles. By J Bürdge. Price 3s. 6d. nett.

II.—"Administration, Organisation and Equipment made Easy."
By Lieut.-Colonel S. T. Banning, the eighth edition.
Revised to date by Captain R. F. Legge, Leinster Regiment. Price 4s. 6d. nett.

#### PRECIS OF FOREIGN MILITARY PAPERS.

#### RUSSIAN PAPERS.

#### INFANTRY RE-ARMAMENT.

(Razvyedchik, July, 1908.)

The Russian Army is still armed with the 3-line (299) rifle which was first issued in 1891 and is now the worst military rifle in Europe, with the possible exception of the Turkish. The question of adopting the new pointed bullet with an increased charge is being discussed, but it is doubtful if it is worth while to tinker up the old rifle. Russia has always lagged behind the other powers as regards her weapons; she clung to the Berdan of 420 calibre, which was hopelessly out of date, till the early nineties. There is no doubt that the next great revolution in small arms will be the introduction of an automatic rifle. Let Russia, by way of a change, be the first to take this great step: the cost will be enormous, at least sixteen million pounds sterling, but it will be cheaper than altering the old 3-line now and re-arming, as all the powers will have to do, with the automatic rifle in a few years' time. Very careful experiments must, of course, be made before the pattern is decided on, but Russia must make up her mind that the automatic rifle is inevitable and take steps accordingly.

#### LESSONS OF THE WAR WITH JAPAN.

(Voenni Sbornik, August, 1908.)

The author considers the personal accounts of two officers who took part, the first in the battle of Liaoyang, the second in the operations on the Shaho. Both were Colonels of the General Staff and were at the time of the war commanding infantry regiments.

Colonel Grulef was despatched with a column consisting of 5 battalions, 6½ squadrons and 6 guns to the extreme left of the Russian positions covering Liaoyang, with orders to stop Kuroki's advance. In a telegram from Army Headquarters, Grulef was informed that Kuroki had "not less than 2 divisions." As ample force was available to reinforce him this telegram produced on the column commander an impression that it was intended to sacrifice him for no good reason. The staff estimate was, as afterwards transpired, too low and a force of 5 battalions and 1 cavalry regiment had been sent to stop the advance of 5 Japanese divisions! Grulef occupied a position covering a ford of the Taitse Ho river and carried out some useless reconnaissances in force on the Japanese bank, during one of which the Russians were caught in a defile and lost 40 men. He continually received the wildest reports from his patrols. On one occasion, 3 Japanese crossed the river and fired

a few shots; this was reported to him as "a considerable force attempting to turn our left flank." A Cossack subaltern especially distinguished himself by discovering a Japanese column, afterwards found to be entirely imaginary, and giving his valuable opinion that the whole force should retire to avoid disaster.

Grulef's detachment was finally relieved and he was ordered to rejoin his Army Corps at Liaoyang. En route he heard a smart action going on on his left; he refused to march to the sound of the cannon, and marched on only to discover that his own corps had been engaged and had wanted assistance.

On arriving at Yentai Railway station he heard that 6 Japanese regiments had been seen to the south of the coal mines. This news threw him into a state of painful indecision. He finally decided to wait at Yentai till 10 at night and then carry out his orders to march to Liaoyang, unless they were countermanded before that hour. The Commander of the 10th Division, also in the neighbourhood of Yentai, displayed even less power to grasp the situation. This officer declared that nothing would induce him to depart from his orders, which were also to march on Liaoyang. Fortunately they both received directions from Army. Headquarters to defend the Yentai coal mines, to which point they accordingly proceeded.

Grulef's remarks on the high gaolyan show his state of mind very clearly. "It impeded the movements of the Russians and gave them no field of fire, while it enabled the Japanese to move unobserved and gave them cover from which to shoot! Why this strongly pro-Japanese plant did not impede the movements of the enemy and allow the Russians to move unobserved is not stated.

Grulef's description of the battle round Yentai is very confused. During the course of it he refused to carry out a direct order to retire, on the ground that a retirement by daylight would entail excessive losses. His passion for the letter of his orders was, therefore, apparently subject to fluctuations

The following incidents, which occurred during the operations on the Shaho, are taken from Colonel Martinof's account:—

A night attack was to be made on a village captured and held by the Japanese, 4 battalions were employed, 3 from one regiment and 1 from another. Two battalions advanced direct on the village, one attacked from the right and another from the left. The scouts meanwhile threatened the rear. Despite the darkness of the night and the far too complicated nature of the plan of attack, the village was recaptured and forthwith put in a state of defence. Four battalions formed the garrison. The original mistake of forming the attacking column from different units now became apparent. The odd battalion was sent back and the fourth battalion of the regiment brought up. As the village only had a front of 300 yards, a garrison of 4 battalions was too large. The flanks were protected by 2 more battalions and a battery. At daybreak the Japanese attacked and poured in a heavy artillery fire. The Regimental Commander at once called for reinforcements which were, very rightly, refused him. He then, before the

infantry attack had developed, retired, reporting that he was compelled to do so owing to the Russian battery having been silenced and in consequence of his own "great losses." That this retirement was quite unnecessary is shown by the fact that the regiment's total casaulties for the whole action amounted to only 21 killed and 205 wounded. While the retirement was taking place, another regiment appeared and made a determined counter-attack on the village. The retiring troops made no attempt to support this attack and it was repulsed with the loss of a thousand men. Why the Regimental Commander received no punishment for this retirement without orders remains a mystery.

A small instance of the futility of sending weakly worded orders occurred during this action. A Divisional General requested a Brigade Commander, who was already engaged, to detach "some" battalions for the Divisional Reserve "if circumstances permit." No officer engaged with the enemy ever considers that he has enough troops, and only the most direct order will make him relinquish the smallest portion of his command. In this case the Brigadier reported that he could not spare a man for the purpose required—a reply that a staff officer who sends this sort of order may always expect to get.

A division, part of a large force, was occupying a section of a defensive position. One regiment (4 battalions, i.e., one-fourth) was placed in reserve. Small reinforcements of 2 to 3 companies were constantly called for and despatched so that in the end the reserve dwindled to 1½ battalions.

Again, a village with a frontage of 700 yards, forming part of a defensive line, had  $8\frac{3}{4}$  battalions crammed into it, while only one battalion was held in reserve. The effect of artillery fire was, of course, tremendous. To such an extent were units mixed up that these  $8\frac{3}{4}$  battalions belonged to two different Army Corps and represented six regiments.

A Colonel, acting in command of a Brigade, on receiving a direct order to recapture a village, replied: "I will prepare to make a night attack on village X. It is held by a strong force of the enemy. I have only 6 very weak battalions, almost without officers, at my disposal. In spite of this, am I ordered to attack?" The G. O. C rightly concluded that an attack carried out by on officer in this frame of mind would not be likely to succeed and countermanded it.

The author concludes that the Russian Army had, during a long period of peace, forgotten that the main object of war is to defeat the enemy regardless of loss, that troops can only retire without orders when they are driven from their positions by the enemy's bayonet columns, that during an action a commander cannot form an exact idea of the loss he has sustained, and that the idea he does form is invariably far worse than the reality, and that the enemy is suffering just as much as we are, and possibly more, in every action.

The time to impress these truths on officers is now, while the memory of the Japanese war is still fresh; if this is done the Russian misfortunes in Manchuria may yet bear golden fruit.

#### NIGHT FIRING FOR INFANTRY.

(Voenni Sbornik, July 1908.)

During the late war both sides operated freely by night, generally with one of two objects—(1) to carry out the actual assault by night, or (2) to push up under cover of darkness to a position from which the assault could be made. It was observed that night assaults were usually successful if they were executed in sufficient force and did not meet barbed wire entanglements or the fire of machine guns. This was due to the fact that infantry fire invariably went high and did little damage to the attackers.

A good example of a night assault is to be found in the Japanese attack on Two Horn Hill, held by the 145th Novocherkasski Regi-

ment on the night of the 12th-13th October 1904.

The Japanese employed 23 battalions (about 20,000 bayonets), formed in three lines. The first line consisted of 6 battalions in single rank, with a frontage of from 3,500 to 4,000 yards. The second line, of 8 battalions in line of company colomns, followed at a distance of 50 to 60 yards and the third 9 battalions, in column of Reserve (very similar to our now-abandoned Assembly formation), marched at 80 to 120 yards in rear of the second. This gave about 5 men per yard of front.

There were therefore 20,000 men in a space not more than 4,000 yards by 250—a magnificent target for infantry armed with

a low trajectory magazine rifle.

Owing to the darkness of the night, the Japanese advanced to 120 yards of the position before fire was opened on them. The bullets all flew high, the attackers rushed in with the bayonet and

easily overwhelmed the 3.000 Russians defending the hill.

Some means must be devised for utilising the power of modern weapons to greater effect than this—our men might as well as have been armed with pike and musket. At present night fire is absolutely useless against an enemy who is establishing himself at a distance of 300 to 400 yards. The defender can adopt three methods for developing an effective fire at night:—

(1) Electric search-lights —These were used with great effect at Port Arthur. Two are required per division. They are however, not suitable, owing to their weight, for use in

field operations.

(2) Machine guns.—Most effective during the Japanese war: their traversing fire absolutely destroys any attacking column that comes under it. We cannot, unfortunately, always have sufficient machine guns to secure the whole front.

(3) Some method of aiming rifles at night so as to ensure their fire sweeping the ground at a height not greater than 3 feet.

The method adopted must not prevent the soldier being able to use his rifle at a moment's notice for bayonet fighting and it must require only materials always available,

The height of the parapet from the ground should not exceed 2½ feet and the top of it must be strengthened as much as possible to prevent the rifle, once laid, shifting. It must be remembered that the pressure of the shoulder tends to force the butt down and so raise the muzzle—the very thing most to be avoided. If a wire is stretched over the muzzles to keep them down, it will inevitably get entangled with the bayonet when the rifle is hurriedly withdrawn. (Note.—The Russian bayonet is always fixed.) Any method of fixing the rifle to the parapet is also useless.

Would it not be possible to train men for night firing so that the left hand, instead of grasping the fore end, should be placed on the sheathing of the barrel and used to press the muzzle down

Every company ought to carry out experiments on the following lines. The company to entrench by daylight, adopting the arrangements for night firing favoured by the Company Commander. Half figure targets, to represent a single rank followed by a line of company columns, should then be put in position. The company to occupy its trench by night and open fire for the time it would take the attackers to cover 400 yards. From the result of these experiments it would be possible to arrive at some definite idea on this very important point.

It is obvious that the necessity for considering the employment of rifle fire by night is another argument for placing trenches at the foot of hills and not on their slopes, as the grazing effect of the defender's fire, vitally important at night, is considerably increased.

#### THE SPECIALISATION OF THE GENERAL STAFF.

(Voenni Sbornik, July 1908.)

The Russian General Staff Officer has usurped many functions not properly his. He is to be found on Army, Army Corps and Divisional Staffs where he is encroaching on the work both of the troop leaders and of the routine staffs. The man who has the responsibility of leading soldiers in battle should be their instructor in peace, but we find it is the General Staff Officer who conducts staff rides, delivers lectures, etc., in the Divisions and Corps. All this comes from what is, in the author's opinion, a wrong idea of the work of the General Staff. That work consists in the scientific study of all possible enemics and the organisation of the national forces to overcome them. It has therefore no direct connection with the training of troops or their peace administration. The General Staff is the directing, thinking head of the army and must not concern itself with executive details. When one considers the number and variety of Russia's possible enemies, that her frontiers practically march with those of Norway, Sweden, Germany, Austria, Roumania, Turkey, Persia, England, China and Japan, that during the last hundred years her troops have fought in theatres of war as different as those of France, Turkistan and Manchuria, it cannot be denied that their proper work is

sufficient for the body of officers forming the Russian General Staff. Let them confine themselves to the study of possible opponents and theatres of war and to the broad lines of mobilisation, leaving everything else to the troop leaders and the lower staff. For General Staff work men of great intellectual powers are required. Troop leading demands, mainly, a strong will and a character that impresses itself on those led and inspires confidence, while ordinary staff work demands an accurate memory and great powers of application. If all General Staff Officers were withdrawn from Army Corps and Divisional Staffs, a comparatively small number would be required. This number should be very carefully selected from officers completing the Staff College course, with the addition of a few specially qualified men who have not been to the College. The English General Staff regulations recognise this last point. The remainder of the successful students should return to their units or to work on the Army Corps and Divisional Staffs, receiving accelerated promotion or increased pay if it is found that the small number of admissions to the General Staff is reducing the flow of candidates to the Staff College. In this way the College would serve a double purpose, acting at once as an instrument for selecting the few highly gifted intellects capable of performing the scientific work of the General Staff and distributing throughout the army a large number of officers with a sound higher military education. The general instruction of the troops would benefit enormously by this arrangement, while the specialists of the General Staff would devote all their energies to study of the vast problems which are their proper field of labour.

#### FRENCH PAPERS.

#### Revue Militaire Suisse.

The May number contains a most opportune description of the famous Italian riding school at Tor di Quinto, pupils from which have recently been making a sensation in England at various public

exhibitions of horsemanship.

The school is of comparatively recent date, and first became known to the outside world at the Turin Equestrian Competitions in 1902. The victory of the Italian riders over all-comers (except the French) in jumping brought the Tor di Quinto system into public notice.

Now-a-days every Italian cavalry officer completes his equestrian education with practical training in jumping and cross-country work at this school.

The school is built on a small rise in very broken country about an hour from Rome. There are six sets of stables, a large court-yard, dining room, etc., for officers, and quarters for the orderlies, etc., (Officers under instruction do not live in the school). All round the

buildings lie spacious paddocks.

The horses consist of those belonging to the school (which are interchangeable with those of the Pignerol school) and the officers' horses. Each officer has one "troop" horse and one or more private horses. The animals are of very varied classes, Italians, thorough breds, light or heavy Irish horses, etc., but all are distinguished for their powers of endurance and jumping capabilities, the latter a tribute in a large measure to the training.

It is remarkable that a short martingale is nearly always used. It is considered that so far from being a danger in jumping, this is

an assistance.

The training.—All the pupils live in Rome, and come out by train for the day. The classes are not large, eight to ten officers to each instructor. The author was apparently attached to the school in a class under Lieut. Bolla, one of the best known riders in Italy. The course consists of training gallops, cross-country riding, jumping

and hunting (fox and deer).

The day begins with a long gallop, taking fences, etc., in the way. This is followed by a severe course of jumps. A feature of these jumps is that fragile obstacles are forbidden. Every fence, etc., is made both high and solid, so that the horse must either jump clear or come to grief. The height of the obstacles necessitates their being taken slow as a rule, and the Italian system is to ease the animal's quarters by leaning far forward, hands low and still. Thus the horse jumps freely and without constraint. The result is that despite the



really severe nature of the work neither vicious nor unwilling animals are to be found in the school.

The obstacles employed are of very varied descriptions, but one feature is very common; the jumps are nearly always on a slope or at the top of a ridge. This necessitates great suppleness and quickness on the horse's part.

The well known vertical slide which is looked upon as a sort of speciality of Tor di Quinto consists of a nearly vertical declivity of about 6 m. in depth. Down this the horse slides on his haunches landing in soft earth. The feat is in reality more spectacular than difficult, and is often varied by the addition of a fence at the top of

the slope.

To the numerous criticisms that the Tor di Quinto training chiefly makes for theatrical effects and show, the author replies from personal experience that the facts are far otherwise. The crosscountry work alone is in his opinion sufficient to acquit the school of the charge of failure to provide for practical instruction. rides are held, the instructor leading straight across an extremely difficult country, rendered more so by craftily-contrived artificial obstacles. The ride consists of a hard couple of hour's galop, and each officer rides his own line and takes his jumps alone. A. N. C. O. brings up the rear to give assistance to any rider in difficulties. Similarly twice a week the whole school goes out with hounds. There are two Hunts in the vicinity of Rome; and the Italian war Ministry subsidises these to the extent of 20,000 lire a year, and all cavalry officers in the neighbourhood ride to hounds, while the Tor di Quinto contingent treat this form of sport as a regular feature of their training.

This school may be said to incarnate the Italian system of equitation, and in this author's opinion the latter certainly represents the most advanced training in practical horsemanship that now exists. He considers in no other country is mere riding-school work (manége), as opposed to practical instruction, given less attention

than here.

At any rate the value of thi instruction is best tested by its results, that is, by the effects of the training given to cavalry recruits by the officers who have passed through Tor di Quinto. The author was permitted to make an inspection of some recruits after three months' instruction and the results appear to have been very satisfactory. The men seemed perfectly at ease, sitting on their horses with confidence and comfort and leaving the animal's head free at the jumps.

The system pursued with the remounts is similar to that for the men. Each horse is trained individually and in the open, not

inside the school.

The article concludes with some remarks to the effect that for the Swiss cavalry who have but little time for the riding school the Tor di Quinto system presents many advantages. It is also observed that it may be true that the Italian system tends to become as it were a speciality, a sport which has no practical military value of itself. But even if this is true, the training in nerve, in courage and in a taste for risk is alone a most valuable acquisition for cavalry officers.

The Swiss correspondent in this number in the course of a review of the Annual Report of the Federal Military Department

for 1907 quotes some rather remarkable statistics.

A medical and physical examination of all recruits took place. During the year 26,536 young men were examined. These were divided into three classes:—

1st category, 6,269 or 24 per cent, who had never carried out any physical exercises.

2nd category, 12,852 or 48 per cent, who had received gymnas-

tic training when at school.

3rd category, 7,415 or 28 per cent, who were members of various sporting clubs and gymnastic societies, or had undergone the regular preparatory military training.

It appeared that of those in the

1st category 48 per cent. passed as fit for service.

2nd , 52 , , , , , , , , 3rd ... 66 .. , , , , , ,

Further, a set of test exercises were performed, consisting of a long jump, lifting of 17 kilos in weight and a sprint of 80 metres. The proficiency in these was marked from 1 to 5 for each individual, 1 representing the highest proficiency.

Then it appeared that the following results were obtained:-

Long jump—								
Marked 1 or 2-1	st	category	17	%;	2nd	category	37%;	3rd
category 67%		•					, ,	
Marked 4 or 5	,,	,,	48	,,	,,	,,	<b>28</b> "	3rd
category $9\%$								
Lifting weight —								
Marked 1 or 2—	,,	,,	52	,,	,,	,,	60 "	3rd
category $77^{\circ}/_{\circ}$								
Marked 4 or 5	,,	,,	34	,,	,,	,,	26 "	3rd
category $12\%$								
Sprint—								
Marked 1 or 2—	,,	"	23	,,	,,	,,	36 "	3rd
category $62\%$								
Marked 4 or 5	,,	,,	26	,,	,,	,,	15 "	3rd
category $4\%$								

This constitutes a striking testimony of the value of physical training of some sort as a preparation for military service, and indeed for general health. In Switzerland an universal effort to popularise physical culture is being made. Gymnasia are being constructed every where, and regular courses of instruction (taken from the military regulations) are prescribed in several cantons. In other parts courses for gymnastic instructors have been instituted.

The Confederation itself encourages the formation of gymnastic classes with certain subventions, and in addition gives grants to

assist in the training of instructors. The regular military preparatory training courses have been in force for two years. In 1906 6,795 men were trained and in 1907 there were 7,567.

The June issue also appears deserving of attention. The opening article "The New Military Organisation in England" is both topical and instructive as representing an outside point of view. Moreover, the author, Colonel Camille Favre being so well known an authority on this subject, the opinions expressed merit careful consideration.

The article starts by explaining that the object of the new organisation is to provide a more effective support to the regular army than has hitherto existed. The author remarks that with the creation of a General Staff and the constant training in the field which now takes place, the army in England has entered upon a new phase of its existence; the partisans of compulsory service are numerous, and Mr. Haldane's project is a part of the evolutionary process.

The main part of the subject-matter is a brief but clear review of the English army as it stands to-day, showing the organisation and distribution of the troops with the system of administration; a short note on the several arms, glancing at the Cardwell system; and a simple but comprehensive explanation of the Militia, Volunteer and Yeomanry systems as they have hitherto existed.

On this follows the description of the new conditions. The

object of the new laws is explained:-

(1) To form an expeditionary corps of all arms, capable of rapid mobilisation.

(2) To furnish the regular army with sufficient reserves to enable it to be kept up to strength during the first period of hostilities.

(3) To form a voluntary army for the defence of English soil, which should be capable of replacing the regular army.

The organisation of the expeditionary corps is next examined, the introduction of the Division of three brigades being mentioned.

It is then observed that there are only some 60,000 men available to replace war wastage, and an explanation is given of the scheme by which Mr. Haldane endeavours to get over this difficulty, that is the *special contingent*. This system of converting the Militia into special battalions is reviewed and as far as training goes the author is unable to see why these men should not reach as high a level as their predecessors; moreover, he is of opinion that the arrangement does in fact furnish a reserve in time of war.

On the other hand the author considers that the reductions in the regular army, more especially the proposal to reduce 33 batteries of artillery to skeleton cadres, if persisted in, may lead to serious consequences; but at the same time he admits that with the present policy of retrenchment very possibly on the whole the solution is sound, in that the reserves have really been improved. The next point is the territorial army. It is remarked among other things that the field artillery of this force, though perhaps not all that could be desired, will probably turn out better than is expected, and in any case it is a necessity. It remains for the country to make the required sacrifices. The method of training the territorial army with its essential condition of six months' work on the outbreak of war is considered a doubtful expedient. In spite of her insular position England may not be given a respite of this length, and at the best this instruction at the last minute cannot be equal to regular training given every year.

The creation of a special department at the War Office to deal with the territorial force is favourably noticed; as also the County Association system, which is admitted to be borrowed to some extent from the Swiss cantonal system. Both measures tend to popularise the new procedure. At the same time Colonel Favre has not failed to observe one defect in the organisation, that only individuals can be recruited from this force for service abroad. Complete units cannot be obtained, unless each several member is willing so to

serve.

The author is of opinion that compulsory service must in the end follow. Mr. Haldane's organisation constitutes a step in that direction, and as the people learn to take a real interest in military matters the advantages of compulsory service will become apparent to them, at least in the Militia or Home army. In England compulsory service is evidently impracticable for a regular army, half of which is always on foreign service.

The remarkable progress made by the National Service League (of which Lord Roberts is President) is a sign of the tendency to regard obligatory service with more favour, this being the avowed object of the League. The idea would be an initiatory service of three to six months, followed by a fortnight's training for four years, all of course in the territorial army. This with a five years' reserve service would produce a million trained Militia men, who could be called upon, in addition to their Home service duties, to volunteer for service abroad.

It is at any rate certain, the article concludes, that in England of the present public opinion has begun to occupy itself with the problem of modifying a military system, which is unsuitable to the conditions of the Empire. Moreover, the marked increase of fresh ideas, and the break up of so many traditions and ancient customs lead to the supposition that the old objection of the English race to obligations of any kind will soon be a thing of the past. The recent change of opinion in the matter of free trade may conceivably be followed by a similar alteration in regard to the military question, which is moreover intimately connected with the other Imperial questions.

The Swiss correspondent of this number has some interesting notes on a lecture given by the President of the Swiss Automobile

Club at Geneva.

The lecturer opened by enumerating the uses made of the motor car by military services at the present day. To facilitate the movements of commanders, and their staffs to carry orders, to complete communications, to perform reconnaissances, and to act as transport for every kind of material, these are only some of the chief functions of the modern military automobile. In Germany and Austria it has been found that motor cycles form most useful adjuncts to cars.

Everywhere experiments are in progress. In France not much has been done, but reservists who are automobilists are used as drivers. In England there is a regular corps of motor volunteers. Sweden has just started a corps of a similar nature. Italy possesses a corps of 30 members, Germany one with 60 members, all of officers' rank. This last is practically a regular unit. Compensation is paid at 20 marks for the vehicle and 15 for the driver, but accidents are not as a rule compensated. The privilege of wearing uniform even off duty is considered a sufficient reward.

In Austria a similiar organisation is in force and is recruited from the two chief clubs.

In Switzerland a volunteer corps of 130 members exists. It is divided into two classes of members, those who undertake to serve in a course of annual training and those who only agree to serve in case of war. Both engage for four years, a term which is in favour with several nations.

There are various opinions as to the proper power for motor vehicles. The limits extend from 15 H.P. in Switzerland to 60 in Germany and Austria. The higher powered cars are naturally apt to be expensive, e.g., in the Swiss 1906 manœuvres a 60 H.P. car cost 119 francs a day against 78 for a 20 H.P. Moreover, the experience of peace tends to show that the heavy cars will not stand the test of war conditions for long, especially in the matter of tyres. In 1907 it was proved that 14 to 40 H.P. represent about the most suitable powers. It is even held that light 8 H.P. cars running at an average of 30 km. per hour would be of great assistance for carrying orders, reconnaissance, etc.

The lecturer concluded by laying down that for Switzerland the following are the desiderata:—

(a) To train officers and men for the organisation of cars and lorries, and to drive the same.

(b) To provide for supply of tyres and liquid fuel.

(c) To establish suitable simple types of car body for transport of provisions and ammunition and especially ambulances, to be capable of being built by any carpenter.

The Belgian correspondent has some notes on the training of cyclists. In that country cyclists companies form part of the carabinier battalions. They are considered solely as detachments of mounted infantry capable of very rapid movement on rounds. In addition, however, to their duties as infantry the cyclist units are given other functions, e.g.—

(a) To occupy important points at a distance to a flank or in front.

(b) To support other arms.

(c) To take part in reconnaissance, etc.

The cyclist, over and above his training as an infantry soldier, is instructed in the mechanism of his machine and in its care and preservation; certain special exercises; police rules for cycles; and maps and map reading. Considerable attention is paid to scouting, etc., and special lectures are given to cyclists during the annual trainings.

The average pace is 12 km. per hour, excluding halts.

An article in the May and June numbers, "Encore le canon à Tir Rapide," in reality a defence of the French gun as compared with its German rival, is of interest in that it describes the genesis of the French Q.-F. field gun which may fairly be looked upon as the forerunner of all modern rapid fire field artillery.

To General Langlois should be attributed the credit of the original idea. As a professor in the Ecole de Guerre he founded a new school of ideas in artillery matters. At that time the theory of the use of the field gun was that every round should be fired at a definite object, and with a fair certainty of hitting that object; for instance, ranging shots should be reduced to a minimum. The target which best answered these requirements was a line of guns, or a dense chain of skirmishers, etc.

But before this the defence of Plevna had shown that a fire which demoralises may be as good as or better than one which destroys; for the Turks, by simply firing away their ammunition, without care or attention, and without even the pretence of aim, merely maintaining a ceaseless stream of bullets, reduced the fearless Russian infantry to a condition of helplessness. The men, stupified by the continual hum of the bullets, lay down, and refused to rise, even sleeping exposed on the field. And this though the losses were in fact insignificant.

These revelations led certain enterprising spirits to suggest regularising what had been no doubt a mere accidental procedure on the Turks' part. The audacity of this conception, which was in substance a proposal for the deliberate waste of ammunition in practically unaimed fire, raised much opposition. But the old established theories were soon to be modified. The introduction of smokeless powder made invisibility the rule on the battlefield. Artillery employed indirect fire and withdrew behind ridges, and infantry opened its ranks till it became a sort of impalpable human dust. The clear definite targets were gone.

For these new targets percussion shell proved useless. The only projectile was the time shrapnel. Artillery had to give up the idea of destroying infantry; it could only hope to kill a few skirmishers, and paralyse or retard the advance; firing at troops was no longer practicable; its place was taken by firing at a zone of the terrain in which troops might be expected to be.

In fact General Langlois' new school held that the action of artillery consisted in sweeping a zone with an unintermittent storm

of bullets, which should cover the ground uniformly within certain limits of depth and breadth, so that troops could not stand or move in that zone; and these squalls of bullets should be repeated at re-

gular intervals as required.

To enable this to be done a gun was required, which would be capable of continuous fire at a very rapid rate for comparatively long periods and at the same time would have a large enough calibre for the shell to contain a considerable number of bullets; and the latter should be of sufficient mass and possessed of sufficient remaining velocity to be effective against men and horses even at long range. It was admitted that percussion firing with a different type of gun would also be required against obstacles, but the objections to a multiplicity of calibres turned the scale in favour of one type of Q.-F. gun.

The first attempts were in the direction of suppression of the recoil, acceleration of the loading process and improving the laying,

so as to eliminate the handspike number at the trail.

The earliest concrete result of the experiments was a carriage and gun built, about 1887, in the Puteaux workshops, and another at the same time in the Bourges foundry. The former had a rigid carriage, but in the latter the gun recoiled inside a jacket and the

carriage was provided with a hydro-pneumatic brake.

The loading was accelerated by using a breach closing arrangement with only two movements, and by employing the cartridge to push the projectile home in the bore. Lastly, the sighting gear was improved. But it was soon found that the shock of discharge lifted the carriage from the ground and threw it off the line. Moreever, the trail excavated a deep hole and further disturbed the laying.

Generally the carriage was crude and rudimentary.

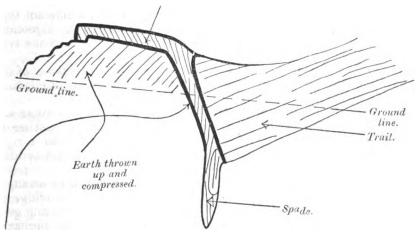
At this stage Colonel Deport, who though the Director of the Puteaux shops had not taken much part in the earlier essays, brought his trained intelligence to bear on the question. He began by advising against the adoption of either of the types which had een constructed, rightly arguing that they merely represented phases in the evolution of the Q.-F. gun, and would soon be superseded by newer and better developments. Fortunately for France the Minister of War accepted this opinion, and deferred the pressing question of re-armament. Accordingly Colonel Deport started his experiments in July 1892.

The result of two years' work was the carriage which with little modification was eventually introduced into the French service. It consisted generally of a body rigidly connected with the wheels and axle, on which rested a movable portion or cradle provided with a brake and running-up gear. The cradle was connected to the gun which it carried and the carriage on which it rested by the elevating gear. The gun recoiled on the cradle being retained in position by six projections which engaged in sideways on the upper

surface of the latter.

To obtain the immobility of the carriage without which the short recoil was useless the trail was constructed with a spade which cut its way into the soil, above this the rear face of the trail was placed at such an angle that it pressed against the rear of the excavation made by the spade while a horizontal projecting surface served to retain and compress the earth thrown up to the rear and thus to ensure the steadiness and immobility of the whole arrangement.





Rear face of trail pressing against rear of excavation.

This arrangement proved to be perfectly satisfactory.

At the same time the projectile and the charge were united in a common envelope or cartridge and an eccentric screw provided a single-motion breach closing arrangement, thus accelerating all operations connected with the loading.

For the laying for line, a system of traversing the cradle on the axle was adopted, thus doing away with shifts of the trail of the

travelling brake.

Lastly, the shoes were provided with study to grip the soil. On recoil the wheels ran on to the shoes and were thus firmly fixed. The carriage was then perfectly steady.

The shell is relatively heavy (7 kg.) and the muzzle velocity high (540 m.), the idea being to obtain the best possible man-kill-

ing effect, while the calibre is 7.5 cm.

Thus was brought to maturity the original type of the Q.-F. gun.

## Revue Militaire Suisse, July 1908.

The July number has several noteworthy items, among which a review of the question of cavalry "Quelques mots sur la cavalerie" is summarised below.

really severe nature of the work neither vicious nor unwilling animals are to be found in the school.

The obstacles employed are of very varied descriptions, but one feature is very common, the jumps are nearly always on a slope or at the top of a ridge. This necessitates great supplieness and quickness on the horse's part.

The well known vertical slide which is locked upon as a sort of speciality of Tor-di-Quinto consists of a nearly vertical declivity of about 6 m, in depth. Down this the horse slides or his haunches landing in soft earth. The feat is in reality more spectacular than difficult, and is often varied by the addition of a fence at the top of the slope.

To the numerous criticisms, that the Tor di Quinto training chiefly makes for theatrical effects and show, the author replies from personal experience that the facts are far otherwise. The cresscountry work alone is in his opinion sufficient to acquit the school of the charge of failure to provide for practical instruction. Regular rides are held, the instructor leading straight across an extreme y difficult country, rendered more so by craftily contrived artificial obstacles. The ride consists of a hard couple of hours, galop, at a each other rides his own line and takes his jumps alone. A N  $^{\circ}$ C O brings up the rear to give assistance to any rider in difficulties Similarly twice a week the whole school goes out with he it is There are two Hunts in the vicinity of Rome, and the Italian war Ministry subsidises, these to the extent of 20,000 lire a year and a cavalry officers in the neighbourhood ride to hounds, while, the T di Quinto contingent treat this form of sport, as a regular feature of their training

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1st category 48 per cent. passed as fit for service.

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Further, a set of test exercises were performed, consisting of a long jump, lifting of 17 kilos in weight and a sprint of 80 metres. The proficiency in these was marked from 1 to 5 for each individual, 1 representing the highest proficiency.

Then it appeared that the following results were obtained :-

Long jump-Marked 1 or 2—1st category 17%; 2nd category 37%; 3rdcategory 67% Marked 4 or 5 28 " 3rd48 " category 9% Lifting weight — Marked 1 or 2- " 3rd52 ,, 60 " category 77°/ Marked 4 or 5 3rd34 " 26 , category 12% Sprint-Marked 1 or 2— " 3rd 23 ,, 36 ,, category 62% Marked 4 or 5 26 " 15 ,, 3rdcategory 4%

This constitutes a striking testimony of the value of physical training of some sort as a preparation for military service, and indeed for general health. In Switzerland an universal effort to popularise physical culture is being made. Gymnasia are being constructed every where, and regular courses of instruction (taken from the military regulations) are prescribed in several cantons. In other parts courses for gymnastic instructors have been instituted.

The Confederation itself encourages the formation of gymnastic classes with certain subventions, and in addition gives grants to

There are numerous opinions as to the part to be played by cavalry in modern war; one party looks upon this arm as obsolete or only to be used for reconnaissance; another party considers cavalry to be merely glorified mounted infantry; while others again predict a return to the traditional shock tactics. The author, however, holds that the majority of these extremists derive their views not from experience or profound study, but from superficial reading or observation. In the future as in the past an army will need cavalry to scout to the front, to cover the flanks, to intervene suddenly and effectively in the combat, to carry out pursuits or cover retreats, etc.

The war in Manchuria proved in fact the disadvantage of the lack of good cavalry, and the excellent results obtainable even with

small bodies of mounted troops if well led.

The failure of the Russian cavalry reconnaissance work during the early part of the war was due partly to the nature of the ground but more to the indifferent handling of the leaders and the bad training of the troops.

In the Sha-ho battle, on the other hand, the action of a Japanese cavalry brigade suddenly appearing on the Russian flank was most

effective.

Of Mischtochenko's raids the first was ineffective, being too slow, and also because the leader allowed himself to be turned from his objective; but the second was far from insignificant in its results; the Russians penetrated far to the rear of the Japanese left wing and rendered valuable services.

Generally the conclusion is that cavalry in modern war will have more and not fewer opportunities than formerly of acting with success on the enemy's rear and flanks, in the pursuit and on the

long lines of communication.

One authority lays down the chief duties of cavalry as scouting and action against the lines of communication. To obtain the necessary training the formation of cavalry divisions in peace time is advocated, such units to be completely equipped with transport, etc., for independent action. Special stress is laid on the necessity for the training of the officers, and it is suggested that part of the instruction should consist not of taking a share in combined manœuvres, but of looking on so as to see the whole and not merely a small fraction of the troops at work.

In Germany both shock tactics and dismounted work are

inculcated.

A point of interest is considered to be the addition of an infantry detachment (regiment or brigade) to cavalry engaged in reconnaissance. The French are very partial to this and the Japanese made excellent use of this form of combined screen to conceal their operations from the scouting Cossacks.

This number has a note on the motor cars used in the man-

œuvres of the 1st Swiss Army Corps in 1907.

Ten vechicles belonging to the volunteer automobile corps were used, mostly for staff officers, 8 of them in 140 day working days

covered 13,000 km. without any breakdown. The chief work was inspection of camps, etc., and to save horse flesh, not so much for carrying orders, etc. It was considered that cross-country work was properly the business of the horse, though on occasion the motors were able to traverse roadless ground.

Generally the manœuvres were a justification of the institution of a volunteer motor corps. The work was regularly and efficiently

performed; there were no delays or stoppages.

An important article records the present position of heavy

field artillery in the various armies.

Germany has as its principal weapon the 15cm. howitzer, but there are in addition a 21cm, mortar and a 10cm. gun. The guns and nowitzers are formed in 6 unit batteries, the mortars 4 to a battery.

The howitzer shell and charge are of 39.5 and 7.7 kg. weight

respectively, and 72 rounds per howitzer are carried.

Austria possesses a 15cm. bronze howitzer, with an ecrasite shell of 38.75 kg. and a 36.9 kg. shrapnel. The battery has 4 howitzers with 128 H. E. and 176 shrapnel shell and 16 rounds of case.

France has no heavy artillery properly so-called. The short 120 mm. and 155 mm. guns are used; but interest is at present concentrated on the new Rimailho 155 mm. howitzer and the 270

mm. siege morter.

The Rimailho howitzer is a long recoil weapon with hydropneumatic brake. The breech closing arrangement is semi-automatic, and the breech opens of itself after every round. Fixed ammunition is used. The shell weighs 43 kg. with a bursting charge of 13 kg. of mélinite. Maximum range 5,000 m. The trunnions are placed to the rear and the recoil on the carriage is constant. The howitzer is dismounted for travelling and carried on a special vehicle. The carriage travels with its own limber. There are only two howitzers in a battery. Attempts are being made to design a shell which will give the effect of shrapnel or common as desired.

Ituly has no real heavy field artillery but in certain stations there are siege parks which can be rapidly mobilised. Experiments

are in progress with a Krupp 14.9 cm. howitzer.

Russia keeps no heavy field artillery in peace, but in war  $15 \, cm$ . gun batteries are formed from the siege artillery, and also light mortar batteries (20 cm.). The guns are six in a battery, mortars 4, 1,000 rounds a piece are carried for guns and for mortars 700. The shell for the gun weighs  $33 \, kg$ . and has a range of 8.300 m.

United States have a new 12 cm. Q.-F. gun. Shell 27.2 kg.

Cartridge 33.5 kg. Maximum range 8,657 m.

Japan has Knapp 12 cm. howitzers with rigid carriage. But more modern equipment is expected to be introduced.

#### ITALIAN PAPERS.

Rivista d'Artiglieria e Genio, April 1908.

This number contains several good articles, but perhaps the most generally interesting are a long critique of a German work on Fortress Warfare, and a note on a stabiliser for smokeless powders.

The German author General von Müller, a well-known authority, has made an exhaustive study of fortress warfare in the last two decades.

The first portion of the book covers the period from 1870 to 1885. This marked the introduction of ideas as to reducing the size of the target to be offered by forts, and to removing guns from the ceinture forts to small batteries placed in the intervals.

Armour also began to come into use. By the end of the period an attack on a fortress was supposed to be divided into two distinct and separate parts, the long range artillery bombardment and the slow infantry advance at close ranges (by sap on occasion). Alto-

gether a deliberate procedure.

In the next period from 1885 to 1890 a reaction set in and von Sauer's system of speedy attack was a source of much discussion. This was apparently a purely artillery system. The use of very heavy and unceasing artillery fire was to drive the enemy from the advanced works, prevent their working parties from working, breach the forts and allow the assault to take place, the whole occupying weeks in place of months. These theories were, however, strongly opposed, notably by Brialmont and Welitschko. The latter's assertion that distant artillery attack would never be decisive was amply confirmed at Port Arthur. This period also showed a great improvement in the power of the gun against armour, and to meet this difficulty concrete was employed in defensive works in conjunction with the armour. The period was generally characterised by an advance in the methods of fortress warfare

The last period 1890 to 1905 includes the introduction of smokeless powder and the extended use of Q. F. ordnance, with consequent changes in tactics. This section of the book brings the review of Fortress Warfare right up to date and is of a most exhaustive nature.

The book concludes with a careful and comprehensive study of the siege of Port Arthur. The final opinion given is that this siege has cleared the air of many purely theoretical ideas, but that the principles of Fortress Warfare remain unaltered by it.

This number has a short notice of a "Tell-tale stabiliser" for smokeless powders, i.e, a substance which, while it has the effect of preventing or at least delaying the decomposition of the powder,

also causes the latter to change colour when decomposition does

eventually set in.

In the French Senate when the report on the Jena explosion was discussed the existence of the "Tell-tale stabiliser," was brought out, and that its use had been proposed for years in France. In Germany the substance is actually in service, and it is remarkable that in that country there have been no accidents with smokeless powders.

However, in June 1907 this "Tell-tale" was officially adopted in France. It is known as difenilamine, a secondary base of ammoniac of the formula  $C_{12}$   $H_{11}$  N derived from N  $H_5$  by the substitution of two atoms of hydrogen in the fenile group  $C_6$   $H_5$ . It is obtained by distilling blue of rosaniline and is produced industrially by heating chlorhydrate of aniline and aniline to 250°.

 $C_6 H_5 \ddot{N}H_2 H\ddot{C}C + C_6 H_5 NH_2$ =2 (C<sub>6</sub> H<sub>5</sub>) NH + NH<sub>4</sub> CC

Difenilamine appears in the form of white crystals which dissolve at 45°; it boils at 310°.

It is used industrially in colouring matters to obtain various colours. It is prepared without difficulty. The numerous experiments carried out in France lead to the hope that it will prove of the utmost value in dealing with smokeless powders.

#### May 1908.

In the May issue the chief article of general interest is one on the Port Arthur trial giving Stössel's defence.

Stössel was condemned to death, a sentence which was afterwards commuted to ten years' imprisonment. It is curious to learn that his former subordinate and chief accuser General Smirnoff was immediately after the trial severely wounded in a duel with General Folk. The interest centres round Generals Stössel and Smirnoff; for it was the latter's supersession in command of the fortress, and the consequent ill-feeling amounting to hatred, between the two which led to the dissensions among the Russians and was probably a contributory cause of the eventual surrender.

During the trial, General Stössel at (he states) the request of his many friends published a small work containing his defence. This is divided into a confutation of the charges brought against him, an account of the friction between sea and land forces, and a statement concerning the number of unwounded men present at the time of the surrender.

Stössel says there were two sets of charges against him, the one official, and the other secret; the latter being mainly founded on Smirnoff's statements. On the latter's head are accordingly heaped many abusive epithets in the course of the statements made by Stössel.

The position of the two Generals was certainly not well defined; but Smirnoff, who at the commencement of the war was in command of the fortress, received instructions from the Viceroy to put himself

under the orders of the General Commanding the Siberian Army Corps in occupation of the Kwantung territory, viz., Stössel.

Stössel states that he could not have informed himself of the ill-preparedness of the fortress (of which omission he was accused), because at the beginning of the war his only connection therewith was the fact that the brigade in garrison belonged to his army corps. He characterises the works as only fit to oppose bows and arrows, and claims the greater credit for resisting so long with such a handicap. He pays a tribute to Kondratenko, and explains that he put the engineers under that officer in place of Smirnoff in view of the incompetence of the latter. Smirnoff in fact put obstacles in the way of preparing the advanced positions

Stossel then asserts that so far from surrendering too soon he held on against the advice of his experts, having recourse to mines and thus performing the hitherto incredible feat of resisting after the enemy had actually lodged in the ditch of the forts or even in the forts themselves. He only gave in at the last in order to end

the sufferings of his troops and the useless slaughter.

In burning words he denies the accusation of cowardice, pointing out that had he so desired he could easily have retired to

Laoteshan, whereas in fact he was always in Aquila's Nest.

The opening pages of the book afford a curious glance behind the scenes in Port Arthur and show the two Russian journalists, Nujin and Kurchinski (both followers of Smirnoff), publishing plans and secrets of the defence in their paper, a copy of which fell into the hands of the Japanese. Both escaped from Port Arthur, and the latter being taken by the Japanese, gave his captors a full description of the state of affairs inside the fortress.

Stössel next takes all the charges severally, remarking that contrary to all principles they were published before the trial:—

1. That he failed to carry out the order to leave the fortress

and join the field army.

He claims that, though Kuropatkin had suggested this course, when he (Stössel) explained Smirnoff's incompetence and the state of affairs generally Kuropatkin decided to leave him in command.

2 That he interfered with the commander of the fortress and

lessened his authority.

The reply is that as Stössel was in chief command it was his business to supervise his subordinate. Moreover, the instances adduced were of an insignificant nature, e.g., the arrest of a correspondent, etc.

3. That he had not taken measures to provision the fortress.

Stössel points out that this is inconsistent with the charge of surrendering while there were still plenty of provisions.

4. Favouritism displayed towards General Folk, who was said to have made adverse remarks on the authorities in public.

This charge is ridiculed.

5. Incorrect reports to superiors.

To the objections to his descriptions of operations as if present, whereas in fact he was nowhere near, Stössel replied that it was the custom in official reports to speak as if giving orders, etc., in person even if not the case.

6. Recommending persons who did not deserve it.

This he said was a matter of opinion which could not be decided by people not present at Port Arthur.

7. This was the main charge, that of surrendering the fortress

in opposition to the opinion of the Council of War.

On the 29th December the Council of War decided by a majority that the resistance should continue until the first line of defence was in the enemy's hands, it being considered that the second and third lines were too weak to hold; Smirnoff did not agree. then said he would himself give the eventual decision in accordance Events moved rapidly after this. On the 31st with circumstances. Sungsushan Fort fell, and the next day the Japanese captured the Aquila's Nest posts in the second line. These Stössel held to be the last serious obstacles to the enemy's advance; the city full of wounded was practically at the mercy of the Japanese whose commanders did not guarantee that a massacre similar to that of ten years before would not follow a victorious assault. There were only ten rounds per gun left in the fortress, and but 10,000 men available. Moreover, from Aquila's Nest the enemy would have been able to look into the city and see its real condition, with the result that they would have insisted on an unconditional surrender. Stössel, in his own opinion, had no option but to surrender at once.

The next paragraphs are devoted to the dissensions between the Army and Navy. It appears that when the Viceroy Alexieff escaped from Port Arthur he left instructions with the Admiral in command, Witheft, to place a few guns at Stössel's disposal for use on shore, inasmuch as the ships were condemned to enforced inactivity.

This order seems to have been the origin of the difficulty. The Naval Officers maintain that Stössel wished to weaken the fleet, while the latter declares that he would have restored the guns at once if the fleet had been ready to act.

The Nanshan battle was the first occasion on which the disagreement made itself felt Stössel asked for naval assistance. It was unwillingly given (according to Stössel) and the instructions illexecuted.

Stössel says that in May he urged the necessity of a naval sortie. The Admirals objected and appealed to Alexieff who supported them, and told Stössel the fortress must defend itself alone, and that the Admiral was the judge as to whether a fleet sortie was possible or not.

Eventually a sortie—said to have been ordered by the Emperor himself—took place in August, with what disastrous results is well known. And in consequence, according to Stössel, the Naval Officers determined to give up sea fighting and assist in the land defence. They did not, however, inform him of the decision; when therefore he

pressed Withest's successor to try another sortie, the latter refused, but without explaining the reason. The differences that ensued developed into bitter hatred, as a proof of which Stössel accuses the

navy of assisting the journalist Nujin to escape.

When, in December, the enemy, having taken 203 Metre Hill, were in a position to bombard the fleet, Stössel wrote to the Admiral to insist on the ships going out to sea. Stössel quotes the reply in full in his book. The letter shows clearly the incapacity, if not worse, of the naval officers, and explains that they had decided to assist on land and not to go to sea. After this Stössel incorporated the crews of the ships in his garrison.

Lastly, Stössel explains that although as he said there were only 10,000 sound men in the fortress, when the surrender took place a large number of sick and wounded marched out with the rest, thus bringing up the total to 23,000. But these men were useless as

soldiers.

The article remarks that though there are many weak points in Stössel's defence, there are also good points. It seems clear that though Stössel was apt to be easily led and of poor intellectual capabilities, he had many good chracteristics, among which are his

care of his troops and power of winning their affection.

The sentence of the Court Martial which is given in full is, as remarked by the author of the article, scarcely consistent, and tends to show that the Court did in fact understand and admit the moral and other reasons which necessitated the surrender. The sentence begins by convicting Stössel of having surrendered without putting into operation possible any means for prolonging the defence, and condemns him to death. In a later paragraph, however, the Court speaks of "a defence without precedent in the annals of military history, which surprised the whole world by the valour of its defenders ....... during the entire siege General Stössel sustained the heroic spirit of the defenders," and recommends that the sentence should be commuted to ten years' imprisonment in a fortress.

The remarkable inconsistency is, however, explained by the fact that a law exists in Russia which inflicts the capital punishment on an officer who surrenders a fortress. The sentence was therefore framed to meet this law, and the real sentence may be considered

as the ten years' imprisonment.

The June issue has a lengthy study of the action of field artillery and its co-ordination with that of other arms. It is pointed out that the efficacy of every arm depends directly on the manner of its employment in respect to the others. A careful examination of the great battles of the war in the Far East shows that victory fell to that army which best understood how to vary the action of the arms to suit the particular needs of the moment in view of the object to be attained. Many examples are quoted, but space forbids the use of more than two or three here.

Buttle of the Yalu.—26th April to 1st May 1904. By the 20th of May the Japanese army was concentrated on the left bank of the

Yalu and in front of the place where the passage was to be effected Yet for 10 days practically no attempt to advance was made. This time was spent in reconnaissance, etc., and in waiting for the heavy artillery. On the 26th a bridge was started in full view of the Russian positions. This was in fact nothing but a lure to draw the fire of the Russian artillery. This object was attained and work on the bridge was stopped by Russian shell. Similarly two other bridges were begun and heavily attacked by the Russians, with the result that not only were the Russian gun positions revealed, but also the fact that they had no heavy field pieces.

Meantime the Japanese heavy and field guns had taken up extremely well concealed positions; and on the morning of the 30th, as soon as the Russian guns opened on the working parties at the bridges, the Japanese guns attacked the Russian batteries. The fire was well directed and effective and under its cover three bridges were thrown across the river and a Japanese division effected the passage without notice by the Russian artillery, which had been

practically silenced by the Japanese.

During the night the Japanese batteries advanced, and in the morning their massed attack soon silenced the Russian guns. This was followed by a general attack on the Russian positions in which the Japanese infantry well supported by their artillery, drove out the defenders and occupied the ground. Advancing too far, however, they lost the support of the guns and were compelled to fall back. A second advance by the artillery was then made though slowly and with difficulty. As soon, however, as the guns were in position the infantry started to the attack again, but the delay had given the Russians time to throw back their left wing and the attempt to cut their line of retreat failed.

This action was a striking example of the co-ordination of the work of the other arms with that of the artillery, and of the support

given by the latter to the infantry.

Takichao, 24th July.—This battle was particularly interesting as the first occasion on which the Russian applied the lessons in artillery work learned from the Japanese, to the discomfiture of the latter.

Gun epaulments and positions had been constructed by the Russians beforehand and probably deceived the Japanese, who no doubt heard of these positions from the Chinese who worked at them. But the Russians threw up fresh positions some 500 m. to the rear during the night before the battle, and in these the guns were placed.

The Japanese after their usual custom started the attack with two or three batteries in the open to draw the Russian fire. When they imagined they had thus located the Russian guns, some 13 Japanese batteries came into action. But as they fired at or to about 300 m. over the old Russian positions, the latter's guns being 500 m. to the rear were never touched.

In fact though there were only 24 Russian guns in all against 78 Japanese, their loss after 15 hours' firing only amounted to 50 men;



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PAPERS. Japanese infantry attack, the Japanese infantry attack, the second as records haded all attempts were in vair other hand as records haded all attempts were in vair other hand as records had been defence. The dapanese infantry attack, the dapanese infantry attack, the state of the day of the day of the day of the find all attempts were in vain. No other support having Russian defence.

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Austro-Hangarian Service is divided into fortress and field detachThe Balloon Service only small numbers are least he Balloon Service only small numbers are kept up. There is In peace time only small numbers are kept up. ments In peace with Vienna connected with the garrison fortress an aeronautic station. From officers (of all arms) with the station of the st ments and the station. From officers (of all arms) who have under-artiflery in that station, the Balloon Corne is artillery in that states school, the Balloon Corps is officered. gone a course and men are taken from the technical services and put N.C. O.s. course at the school before being 1.0. K. C. O.s and put through a course at the school before being drafted to the Balloon

The chief principles of the employment of balloons in the field Ascents are made at the order of the commander of the troops, are: who decides the locality.

Balloons are nearly always used for tactical reconnaissance, and

seldom to observe artillery fire.

The observer is put in possession of the general situation, and the Chief Commander's ideas.

On the march if necessary the balloons go with the advanced

guard.

In the attack the balloon makes observations in rear of the enemy's line, notes numbers and location of troops, etc.

On the defensive, the defended front is the situation for the

The inflating station should, if possible, be beyond the enemy's artillery range and sheltered from wind. A good water-supply is essential when the gas is not carried, and good roads.

In forts the balloons are attached to the artillery of the fortiess and used both for reconnaissance and for observation of artillery

Free balloons are employed to take despatches, etc., out of the fortress.

The balloons used are cylindrical and spherical.

For the field detachments gas is carried ready compressed in containers at 200 atmospheres. A steel container 1,410 mm. long with 7 mm. walls holds 7 cubic metres of hydrogen.

A fortress balloon can be filled in 12 minutes, while a field

balloon takes 15.

A field balloon detachment consists of 5 Officers, 10 N. C. O.s. 70 men, 70 horses and 12 vehicles (of which 6 for the hydrogen containers and 1 for the envelope of the balloon).

There is also in this issue a short note on sand bags (sacchi da

trincea) and the future infantry man's shield.

Much use was made of sand bags in the war in the Far East and they are now adopted as ordinary equipment by the Japanese. The Russians are making experiments with a sack of such dimensions that it will cover the head and shoulders of a man lying down, say  $53 \times 36$  cm. Filled this bag weighs 14 to 20 kg.

These sand bags filled with small stones were proof against a rifle, but not if recently excavated earth was used. The colour selected was greenish grey, which was practically indistinguishable

at 600 paces.

The idea was that the sand bags are filled before the attack. Each man carries a bag held horizontally in front of his body (his rifle being slung) and advances from 2,500 to 1,400 paces (from the enemy) by short rushes of 60 paces, halting and lying down behind the cover of the bag after each rush. From 600 paces or so the advance is a wriggle on the ground behind the sand bag.

It was proved that good protection was given. But the weight of the sand bag appears to make the idea impracticable, though the Russians do not admit this, affirming that their men prefer to carry

the bags rather than dig shelter trenches.

The infantry shield is a French proposal. It consists of a rectangular steel plate  $35 \times 30$  cm. and 3.8 mm. thick, weighing over 3 kg. It is worn on the left forearm by means of a strap. When the man is walking or running he holds his arm in front of his bent head. The shield then covers his head and the upper part of his body. Lying down the shield is held upright in front of the man who uses his rifle on one side. The originator of the idea holds that the feeling of security (whether real or fancied) engendered by the use of the shield would be of immense value in keeping up the morale of troops under fire, and would far outweigh the drawbacks of the weight and the fact that the cover is not convenient and far from perfect.

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# A LECTURE ON SOME MORAL ASPECTS OF MODERN WAR.

Delivered at the Town Hall, on Wednesday, the 23rd September 1908, at 5-30 p.m.

BY COLONEL H. V. Cox, A.Q.M.G.

Let a man know the exact worth of the instrument he uses, the extent to which its temper may be trusted, the conditions under which it may be expected to fail him, and he will be better armed than the man who looks upon it as an instrument which is to be relied upon under any circumstances whatever. The worth of the instrument with which war is waged depends chiefly on moral influences to which it is subjected.

Armies are not machines, but living organisms of intense sus-

ceptibility. - Henderson "Science of War."

1. Introductory.

2. The modern battlefield.

- 3. Causes of failure in morale.
- 4. The American Civil War.
- 5. Gravelotte, the Mance ravine.
- 6. The Army of the Loire, 1870.
- 7. An Episode of the S. African War.

8. The psychology of crowds.

- 9. The effects of democracy and socialism on armies.
- 10. Resumé and conclusions.
  - (a) The "crabbing" spirit; a moral canker.

(b) The "friction of war."

(c) The connection between health and morale.

(d) The study of military history.

I should like to say before I get to business that I have no intention of laying down the law and wish you to be good enough to take me as in the suggestive mood throughout.

My apology for my subject is that, from personal motives, I have thought a good deal about it, and I believe it hasn't done me much harm, also I find that much better men than myself have done the same.

Most of us have devoted some thought to, and have read a good deal about, the modern battlefield. That admirable publication "Combined Training" gives the clearest and most concise instructions as to what the duties of all ranks and all branches of the service should be on such occasions. I make no doubt that, like the poor, it is always with you! But "Combined Training," being what it is, cannot tell us much of the soldier as a human creature, civilised and therefore often nervous—and subject to many curious influences—some apparent, some occult—as to the enormous importance of motive—previous mental training, good food, and other matters, to men during an ordeal of the kind that modern war certainly must be.

In short "Combined Training" is obliged to treat all soldiers as of, more or less, equal and constant value. I want to try to put before you some considerations which a text-book cannot include in its pages; and to attempt to show how these considerations affect among other things the "art of command".

We may consider here for a minute some of the conditions of a 20th century battle as recorded for us by those who have seen one.

The shortest and most graphic account of a latter day fight that I know of was the one given by the naval brigade blue jacket when asked to describe the action of Majuba Hill. He said, "It took me 3 hours to climb the blooming hill, and I only touched ground 3 times coming down"! Such power of concise description defies competition!

A battle nowadays is an event usually preceded by a great deal of hard marching in order to effect the necessary concentration for decisive action.

The soldier therefore arrives, if not tired out, at all events under considerable physical strain.

The rapid, and unforeseen, movements leading up to a big collision are very apt to throw out supply calculations, and so the soldier is frequently, if not on short commons, yet not getting the food he is accustomed to.

Experience proves that the duration of battles of the first order, such as Liaoyang or Mukden may run to several days—during that time experience also shows that many corps may be continuously engaged—for the reason that it is impossible to relieve or extract them—that no hour of the day or night can be counted upon as relaxation from the grim business in hand, and that it is extremely difficult (and not likely to become less so) to take food into the front of the battle, or to distribute it when it gets there.

Add to all this the facts that the soldier is surrounded by sights and sounds of a truly terrific nature, that he is seldom privileged to come to such close quarters as to get angry, and must therefore view the situation, if he has sufficient imagination to take it in at all, in the coolest of cold blood, and we have a very faint idea of the physical, mental and nervous strain entailed by such crises in modern

We read a great deal of victories - and something of defeats and failures—in most military works, but few go at all deeply into

the human causes which are assuredly large factors in war.

It will be found generally that want of discipline, in the highest sense of the word, was the main cause of failure; but as discipline applies more to the soldier than the man, and as it is the man we are considering, I propose to go further and to consider if there are not often other causes, usually it is true incompatible with good discipline, but still worthy of separate consideration.

We need not go further back than 1860, as if we do, we get rapidly out of touch with the essentially modern conditions necessary

for our present purpose.

In the American Civil War in 1862, at Shiloh, Buell, coming up to reinforce Grant who had been surprised and driven back in his riverside camps, found a crowd of soldiers whom he estimated at one-third of Grant's entire force or 15,000 men cowering under shelter of the river bluffs. These men had taken little part in the desperate struggle going on above them. In this particular instance the failure of Grant to entrench his camps, standing as they did with their back on the river, and the neglect of reconnaissance, which enabled Johnson to close in on the Northern Army without warning, may well have induced a nervous feeling among the Federal troops which led to panic.

At Seven Pines when Hooker brought up his Division about dark, he reported that he had been delayed by the throng of fugitives through whom the Colonel of his leading corps had had to force his

way with the bayonet.

A little later at the Antietam, two Federal army corps, repulsed by Lee on his left, almost dissolved, and it was reported on the following day that many had dropped out on the march while large numbers had dispersed and left during the battle!

After Gettysberg out of 22,000 loaded rifles found on the battlefield only 6,000 were loaded with one cartridge. One rifle had 22

bullets in the barrel!

It was found that the men who fell out to boil the early morning coffee for their comrades usually forgot to fall in again till a battle was over. The term "coffee boiler" became a term of reproach in the Federal army.

These instances, and many others that occurred during this war, are particularly interesting to us, as the soldiers were of our blood.

Want of discipline was, no doubt, the primary cause; but I think the careful student of this war will admit that the Northern armies failed till 1863 to appreciate the terrible seriousness of war as they had undertaken it—that the highly civilised and intelligent republican rank and file, permeated with the spirit which leads men to think one man as good as another, if not better, and aware that most of their officers were as amateur as themselves, adopted a critical and calculating frame of mind which must be the worst possible preparation for the vicissitudes of modern war; as it leads to pusillanimous doubt before battle and paralysing despair after defeat. General Palfrey, writing of the army of the Potamac says: "Our success was greatly lessened by jealousy, distrust 'and general want of the entente cordiale." The fact that the troops were constantly mishandled by their amateur leaders during the earlier stages of the war no doubt caused this spirit to spread to a very dangerous extent. Where leaders capable of exciting and sustaining confidence and enthusiasm among their men existed, such as Lee, Jackson and Sherman, we hear of no such spirit causing trouble.

Turn now to a very different army—that wonderful conscript machine that invaded France in 1870—and examine certain historical occurrences. The French frontier was crossed on the 4th of August. It is recorded that the Crown Prince noticed at Worth that men were standing in file 5 and 6 deep behind many trees in rear of the fighting line, and that they could not be induced to leave their shelter. The battles of Weissenbourg, Worth and Spicheren during the first half of the month must however have roused in the German army generally an assurance of victory. The retreat of the French from the Saar to the Moselle, past entrenched and abandoned camps and positions, must have created in the German ranks a sense of great superiority—Vionville on the 16th August had certainly not decreased the feeling.

On the 17th Bazaine was at bay, with his left wing behind Gravelotte close to the fortress of Metz, and in touch with the German advanced guard. His right was well thrown back to the valley of the Orme.

The German troops moving forward to reinforce the advanced guard of the first army under Steinmetz had marched 20—24 miles on the 17th in hot summer weather and the infantry were tired out, but they fed and rested well that night.

Surely never had troops a fairer promise for the day of battle! and never did an army's morale seem in less danger! Yet we know that on the 18th no less than three serious panics occurred, any one of which might have had disastrous consequences, but for the fact that the French Generals were generally ignorant of what was going on in front of them, and when they were not, the disposition of the French ar ny was so faulty that nothing but local counter-attacks were possible.

It will be remembered that Steinmetz received his orders from Von Moltke about 10-30 A.M. on the 18th. They were that, pending the development of the movements of the 2nd army under Prince Frederick Charles, he should, at first, fight a containing battle only, attacking the French left, eventually, from the direction of the Bois du Vaux.

To the objections to his descriptions of operations as if present, whereas in fact he was nowhere near, Stössel replied that it was the custom in official reports to speak as if giving orders, etc., in person even if not the case.

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On the 29th December the Council of War decided by a majority that the resistance should continue until the first line of defence was in the enemy's hands, it being considered that the second and third lines were too weak to hold; Smirnoff did not agree. then said he would himself give the eventual decision in accordance Events moved rapidly after this. On the 31st with circumstances. Sungsushan Fort fell, and the next day the Japanese captured the Aquila's Nest posts in the second line. These Stössel held to be the last serious obstacles to the enemy's advance; the city full of wounded was practically at the mercy of the Japanese whose commanders did not guarantee that a massacre similar to that of ten years before would not follow a victorious assault. There were only ten rounds per gun left in the fortress, and but 10,000 men available. Moreover, from Aquila's Nest the enemy would have been able to look into the city and see its real condition, with the result that they would have insisted on an unconditional surrender. Stössel, in his own opinion, had no option but to surrender at once.

The next paragraphs are devoted to the dissensions between the Army and Navy. It appears that when the Viceroy Alexieff escaped from Port Arthur he left instructions with the Admiral in command, Witheft, to place a few guns at Stössel's disposal for use on shore, inasmuch as the ships were condemned to enforced inactivity.

This order seems to have been the origin of the difficulty. The Naval Officers maintain that Stössel wished to weaken the fleet, while the latter declares that he would have restored the guns at

once if the fleet had been ready to act.

The Nanshan battle was the first occasion on which the disagreement made itself felt. Stössel asked for naval assistance. It was unwillingly given (according to Stössel) and the instructions illexecuted.

Stössel says that in May he urged the necessity of a naval sortie. The Admirals objected and appealed to Alexieff who supported them, and told Stössel the fortress must defend itself alone, and that the Admiral was the judge as to whether a fleet sortie was possible or not.

Eventually a sortie—said to have been ordered by the Emperor himself—took place in August, with what disastrous results is well known. And in consequence, according to Stössel, the Naval Officers determined to give up sea fighting and assist in the land defence. They did not, however, inform him of the decision; when therefore he

pressed Withest's successor to try another sortie, the latter refused, but without explaining the reason. The differences that ensued developed into bitter hatred, as a proof of which Stössel accuses the

navy of assisting the journalist Nujin to escape.

When, in December, the enemy, having taken 203 Metre Hill, were in a position to bombard the fleet, Stössel wrote to the Admiral to insist on the ships going out to sea. Stössel quotes the reply in full in his book. The letter shows clearly the incapacity, if not worse, of the naval officers, and explains that they had decided to assist on land and not to go to sea. After this Stössel incorporated the crews of the ships in his garrison.

Lastly, Stössel explains that although as he said there were only 10,000 sound men in the fortress, when the surrender took place a large number of sick and wounded marched out with the rest, thus bringing up the total to 23,000. But these men were useless as

soldiers.

The article remarks that though there are many weak points in Stössel's defence, there are also good points. It seems clear that though Stössel was apt to be easily led and of poor intellectual capabilities, he had many good chracteristics, among which are his

care of his troops and power of winning their affection.

The sentence of the Court Martial which is given in full is, as remarked by the author of the article, scarcely consistent, and tends to show that the Court did in fact understand and admit the moral and other reasons which necessitated the surrender. The sentence begins by convicting Stössel of having surrendered without putting into operation possible any means for prolonging the defence, and condemns him to death. In a later paragraph, however, the Court speaks of "a defence without precedent in the annals of military history, which surprised the whole world by the valour of its defenders ....... during the entire siege General Stössel sustained the heroic spirit of the defenders," and recommends that the sentence should be commuted to ten years' imprisonment in a fortress.

The remarkable inconsistency is, however, explained by the fact that a law exists in Russia which inflicts the capital punishment on an officer who surrenders a fortress. The sentence was therefore framed to meet this law, and the real sentence may be considered

as the ten years' imprisonment.

The June issue has a lengthy study of the action of field artillery and its co-ordination with that of other arms. It is pointed out that the efficacy of every arm depends directly on the manner of its employment in respect to the others. A careful examination of the great battles of the war in the Far East shows that victory fell to that army which best understood how to vary the action of the arms to suit the particular needs of the moment in view of the object to be attained. Many examples are quoted, but space forbids the use of more than two or three here.

Buttle of the Yalu.—26th April to 1st May 1904. By the 20th of May the Japanese army was concentrated on the left bank of the

Yalu and in front of the place where the passage was to be effected Yet for 10 days practically no attempt to advance was made. This time was spent in reconnaissance, etc., and in waiting for the heavy artillery. On the 26th a bridge was started in full view of the Russian positions. This was in fact nothing but a lure to draw the fire of the Russian artillery. This object was attained and work on the bridge was stopped by Russian shell. Similarly two other bridges were begun and heavily attacked by the Russians, with the result that not only were the Russian gun positions revealed, but also the fact that they had no heavy field pieces.

Meantime the Japanese heavy and field guns had taken up extremely well concealed positions; and on the morning of the 30th, as soon as the Russian guns opened on the working parties at the bridges, the Japanese guns attacked the Russian batteries. The fire was well directed and effective and under its cover three bridges were thrown across the river and a Japanese division effected the passage without notice by the Russian artillery, which had been

practically silenced by the Japanese.

During the night the Japanese batteries advanced, and in the morning their massed attack soon silenced the Russian guns. This was followed by a general attack on the Russian positions in which the Japanese infantry well supported by their artillery, drove out the defenders and occupied the ground. Advancing too far, however, they lost the support of the guns and were compelled to fall back. A second advance by the artillery was then made though slowly and with difficulty. As soon, however, as the guns were in position the infantry started to the attack again, but the delay had given the Russians time to throw back their left wing and the attempt to cut their line of retreat failed.

This action was a striking example of the co-ordination of the work of the other arms with that of the artillery, and of the support

given by the latter to the infantry.

Takichao, 24th July.—This battle was particularly interesting as the first occasion on which the Russian applied the lessons in artillery work learned from the Japanese, to the discomfiture of the latter.

Gun epaulments and positions had been constructed by the Russians beforehand and probably deceived the Japanese, who no doubt heard of these positions from the Chinese who worked at them. But the Russians threw up fresh positions some 500 m. to the rear during the night before the battle, and in these the guns were placed.

The Japanese after their usual custom started the attack with two or three batteries in the open to draw the Russian fire. When they imagined they had thus located the Russian guns, some 13 Japanese batteries came into action. But as they fired at or to about 300 m. over the old Russian positions, the latter's guns being 500 m. to the rear were never touched.

In fact though there were only 24 Russian guns in all against 78 Japanese, their loss after 15 hours' firing only amounted to 50 men;

The force moved off at 9 P.M., its R E. machine guns and hospitals in rear. These took a wrong road from the start, dis-

covered it during the night, and halted till dawn.

The leading regiment of the column was ordered to march with fixed bayonets—a most wearying and useless precaution and the order is of itself a fair indication of the lack of perception which governed the proceedings. For four hours the column plodded on, when it became evident that the intended route had not been followed. By this time the infantry had marched 10½ miles over rough ground in the dark and were showing very unmistakable signs of fatigue; the discouraging rumour that the column had lost its way no doubt added to their depression. Both the Official and Times histories agree that the leader would have done better to have postponed what was now an extremely hazardous enterprise to another day, but, of boundless energy and iron physique himself, he could not appreciate the state of his troops. In fact he did not realise that, the instrument he was using might under the circumstances be expected to fail him.

The troops rested an hour and moved on at 2 A.M. From that time till daylight (4 A.M.) the wearied infantry stumbled along over ground which would have been difficult even by day. At dawn, though the General was aware that he was then close to the enemy, no precautions were taken, and it must have been evident to any soldier who thought about it at all, that the formation of the force, now moving along between hills, was courting

disaster.

Eventually fired upon in column of route, a succession of disjointed, and generally spiritless, attacks on the Boer position followed. The General led instead of directing; five companies of one battalion were prematurely withdrawn from the attack, and the one party that had succeeded in gaining a foothold close to a crest of the Boer position were unfortunately shelled by their own guns.

Retirement was ordered, and its execution is thus described

by an eye-witness:—

"The men retiring from the hill rushed to the donga for safety from the heavy rifle fire, and on getting into it laid down, and many went to sleep. Many men were by this time so thoroughly done up that they did not appear to care what happened to them. Many still remained on the hill, some because they had not heard the order to retire, and some because, utterly weary, they had sunk down to sleep in the dead angle at the foot of the height."

Over 500 men were missing besides 135 known to be killed and

wounded when all was over.

Parched with thirst, and half dead with fatigue, the rest of the infantry staggered back over the 11 long miles to the railway by mid-day. The steadiness and good shooting of the batteries, the presence of the mounted infantry, and a half-hearted pursuit by the enemy, alone saved them from destruction.

The Russians are making experiments with a sack of such dimensions that it will cover the head and shoulders of a man lying down, say  $53 \times 36$  cm. Filled this bag weighs 14 to 20 kg.

These sand bags filled with small stones were proof against a rifle, but not if recently excavated earth was used. The colour selected was greenish grey, which was practically indistinguishable

at 600 paces.

The idea was that the sand bags are filled before the attack. Each man carries a bag held horizontally in front of his body (his rifle being slung) and advances from 2,500 to 1,400 paces (from the enemy) by short rushes of 60 paces, halting and lying down behind the cover of the bag after each rush. From 600 paces or so the advance is a wriggle on the ground behind the sand bag.

It was proved that good protection was given. But the weight of the sand bag appears to make the idea impracticable, though the Russians do not admit this, affirming that their men prefer to carry

the bags rather than dig shelter trenches.

The infantry shield is a French proposal. It consists of a rectangular steel plate  $35 \times 30~cm$ , and 3.8~mm, thick, weighing over 3~kg. It is worn on the left forearm by means of a strap. When the man is walking or running he holds his arm in front of his bent head. The shield then covers his head and the upper part of his body. Lying down the shield is held upright in front of the man who uses his rifle on one side. The originator of the idea holds that the feeling of security (whether real or fancied) engendered by the use of the shield would be of immense value in keeping up the morale of troops under fire, and would far outweigh the drawbacks of the weight and the fact that the cover is not convenient and far from perfect.

The result of the wave of instinct, mysteriously and instantaneously communicated, may be to produce an advance which nothing can withstand, a halt which no leading can stimulate, or a retirement which no threats or blows can stop.

There is possibly a fleeting moment when it is a toss up which

of the three actions is going to be taken.

It is here the true leader comes to the front. He has foreseen the stress, he has taken the opportunity of the "silence which usually denotes the moment of coming under serious fire" to say a word to his men that will remain with them when all but instinct has deserted them—he is in such close touch with them that he sees the psychological moment arriving—and he alone is able to turn it into glorious action which will make them bad to beat for the rest of a campaign.

The company or squadron leader has indeed more to think about than is laid down in any text-book on drill or training, and this important part of their duty demands as deep a study of military history in regard to humanity, as the rest does of military

history in regard to tactics.

The tendency of the world as it becomes more and more civilised is towards democratic forms of Government. In some countries, as in our own, the sovereign head remains, in others democracy rules in

the form of a republic.

Can the same devotion be expected from an army employed by a republic as from one sent to battle by a despotic or constitutional sovereign? The feeling of personal loyalty counts for much with the soldier. It is difficult to imagine an English, German, Russian or Japanese soldier without it. It is a sentiment that has, we know,

often been appealed to with striking effect.

As argued in the case of the American War, a republic has levelling tendencies which must be dangerous to the well-being of armies. With the Anglo-Saxon races democracy implies the highest form of freedom—freedom to the individual to rise as high as his abilities will carry him—and, therefore, be the race ruled by a constitutional sovereign, or be it a republic, the democratic spirit is eventually little harmful to the soldier. Among the Latin Gallic races the tendency is to level down instead of up. A bas is the national expression of it in France. When the democratic spirit takes this form it becomes an insidious enemy to an army, and works towards depriving the soldier of those feelings of loyalty, respect for, and confidence in his leaders which should go far to sustain him in the stress of battle. We may well hope that the English equivalent of the ominous cry en avant les epaulettes will never be heard in our army.

Whatever may be our conclusion as to the effect of democracy on the fighting man, there can be little doubt that socialism has a

wholly evil influence.

Its presence in conscript armies is a factor that cannot be neglected, and, as socialism increases in a nation, so its conscript soldiers

become more undependable. Its spirit is antagonistic to war. One great safeguard the world has against it is that its exponents refuse to recognise the true influence war has exerted, and always will exert, in the formation of national character. A nation of socialists by refusing to fight, if from no other cause, must become hewers of wood and drawers of water, or as extinct as the Dodo.

The inevitable presence of the socialist element in conscript armies has always seemed to me a strong argument against such an

army for England.

There may be in our country a tiresome apathy towards the soldier, but we have never known that active spirit of anti-militarism which is a national danger on parts of the continent of Europe, and

which is akin to socialism, if not entirely of it.

Latest developments at home seem to show that the recognised leaders of the Labour party are beginning to realize that to be prepared for war is the best way of securing peace. When the "Clarion" is found among the prophets one may conclude that socialistic doctrines are not, as yet, doing much harm to England's navy or army.

It is asserted that military service actually tends to an increase of socialism in France, and this is attributed to the very severe code of punishments, but the fact is that the severity is necessitated by the prevalence of anti-military socialistic doctrine; and by the levelling down tendencies of the republican spirit of

France herself.

This appears to be proved by the different results of military service on the manhood of Germany and of the sturdy Swiss Republic. Large numbers of socialists join the ranks and give some trouble, but it is found that they return to civil life better and more sober minded citizens.

To sum up what it is thought may be learnt from the subject

of this lecture.

First as regards the effect of moral influences upon armies.

The ordeal of modern fighting makes it more than ever necessary that the commander shall know the exact worth of the instrument he is using at the time, or, in other words, put his

finger on the pulse of his command and keep it there.

The maintenance of enthusiasm, confidence and loyalty is of vital importance in any army. Criticism from within must be suppressed. This can only be effected by a high sense of discipline and by self-restraint among officers. Once the "crabbing" spirit gets abroad it becomes a canker on the morale of an army. The Federals found it so in 1860, and our own later experiences prove that we are by no means free from this malignant growth. It is to be noted that the two most successful armies that have made war in the last 50 years were remarkably free from this crabbing spirit.

Clausewitz points out that in war "everything is simple but the simplest thing is difficult. These difficulties accumulate, and produce a friction which no man can imagine who has not seen war."

I should like to say before I get to business that I have no intention of laying down the law and wish you to be good enough to take me as in the suggestive mood throughout.

My apology for my subject is that, from personal motives, I have thought a good deal about it, and I believe it hasn't done me much harm, also I find that much better men than myself have done the same.

Most of us have devoted some thought to, and have read a good deal about, the modern battlefield. That admirable publication "Combined Training" gives the clearest and most concise instructions as to what the duties of all ranks and all branches of the service should be on such occasions. I make no doubt that, like the poor, it is always with you! But "Combined Training," being what it is, cannot tell us much of the soldier as a human creature, civilised and therefore often nervous—and subject to many curious influences—some apparent, some occult—as to the enormous importance of motive—previous mental training, good food, and other matters, to men during an ordeal of the kind that modern war certainly must be.

In short "Combined Training" is obliged to treat all soldiers as of, more or less, equal and constant value. I want to try to put before you some considerations which a text-book cannot include in its pages; and to attempt to show how these considerations affect among other things the "art of command".

We may consider here for a minute some of the conditions of a 20th century battle as recorded for us by those who have seen one.

The shortest and most graphic account of a latter day fight that I know of was the one given by the naval brigade blue jacket when asked to describe the action of Majuba Hill. He said, "It took me 3 hours to climb the blooming hill, and I only touched ground 3 times coming down"! Such power of concise description defies competition!

A battle nowadays is an event usually preceded by a great deal of hard marching in order to effect the necessary concentration for decisive action.

The soldier therefore arrives, if not tired out, at all events under considerable physical strain.

The rapid, and unforeseen, movements leading up to a big collision are very apt to throw out supply calculations, and so the soldier is frequently, if not on short commons, yet not getting the food he is accustomed to.

Experience proves that the duration of battles of the first order, such as Liaoyang or Mukden may run to several days—during that time experience also shows that many corps may be continuously engaged—for the reason that it is impossible to relieve or extract them—that no hour of the day or night can be counted upon as relaxation from the grim business in hand, and that it is extremely difficult (and not likely to become less so) to take food into the front of the battle, or to distribute it when it gets there.

Add to all this the facts that the soldier is surrounded by sights and sounds of a truly terrific nature, that he is seldom privileged to come to such close quarters as to get angry, and must therefore view the situation, if he has sufficient imagination to take it in at all, in the coolest of cold blood, and we have a very faint idea of the physical, mental and nervous strain entailed by such crises in modern war.

We read a great deal of victories - and something of defeats and failures—in most military works, but few go at all deeply into

the human causes which are assuredly large factors in war.

It will be found generally that want of discipline, in the highest sense of the word, was the main cause of failure; but as discipline applies more to the soldier than the man, and as it is the man we are considering, I propose to go further and to consider if there are not often other causes, usually it is true incompatible with good discipline, but still worthy of separate consideration.

We need not go further back than 1860, as if we do, we get rapidly out of touch with the essentially modern conditions necessary

for our present purpose.

In the American Civil War in 1862, at Shiloh, Buell, coming up to reinforce Grant who had been surprised and driven back in his riverside camps, found a crowd of soldiers whom he estimated at one-third of Grant's entire force or 15,000 men cowering under shelter of the river bluffs. These men had taken little part in the desperate struggle going on above them. In this particular instance the failure of Grant to entrench his camps, standing as they did with their back on the river, and the neglect of reconnaissance, which enabled Johnson to close in on the Northern Army without warning, may well have induced a nervous feeling among the Federal troops which led to panic.

At Seven Pines when Hooker brought up his Division about dark, he reported that he had been delayed by the throng of fugitives through whom the Colonel of his leading corps had had to force his

way with the bayonet.

A little later at the Antietam, two Federal army corps, repulsed by Lee on his left, almost dissolved, and it was reported on the following day that many had dropped out on the march while large numbers had dispersed and left during the battle!

After Gettysberg out of 22,000 loaded rifles found on the battlefield only 6,000 were loaded with one cartridge. One rifle had 22

bullets in the barrel!

It was found that the men who fell out to boil the early morning coffee for their comrades usually forgot to fall in again till a battle was over. The term "coffee boiler" became a term of reproach in the Federal army.

These instances, and many others that occurred during this war. are particularly interesting to us, as the soldiers were of our blood.

Want of discipline was, no doubt, the primary cause; but I think the careful student of this war will admit that the Northern armies failed till 1863 to appreciate the terrible seriousness of war as they had undertaken it—that the highly civilised and intelligent republican rank and file, permeated with the spirit which leads men to think one man as good as another, if not better, and aware that most of their officers were as amateur as themselves, adopted a critical and calculating frame of mind which must be the worst possible preparation for the vicissitudes of modern war; as it leads to pusillanimous doubt before battle and paralysing despair after defeat. General Palfrey, writing of the army of the Potamac says: "Our success was greatly lessened by jealousy, distrust and general want of the entente cordiale." The fact that the troops were constantly mishandled by their amateur leaders during the earlier stages of the war no doubt caused this spirit to spread to a very dangerous extent. Where leaders capable of exciting and sustaining confidence and enthusiasm among their men existed, such as Lee, Jackson and Sherman, we hear of no such spirit causing trouble.

Turn now to a very different army—that wonderful conscript machine that invaded France in 1870—and examine certain historical occurrences. The French frontier was crossed on the 4th of August. It is recorded that the Crown Prince noticed at Worth that men were standing in file 5 and 6 deep behind many trees in rear of the fighting line, and that they could not be induced to leave their shelter. The battles of Weissenbourg, Worth and Spicheren during the first half of the month must however have roused in the German army generally an assurance of victory. The retreat of the French from the Saar to the Moselle, past entrenched and abandoned camps and positions, must have created in the German ranks a sense of great superiority—Vionville on the 16th August had certainly not decreased the feeling.

On the 17th Bazaine was at bay, with his left wing behind Gravelotte close to the fortress of Metz, and in touch with the German advanced guard. His right was well thrown back to the valley of the Orme.

The German troops moving forward to reinforce the advanced guard of the first army under Steinmetz had marched 20—24 miles on the 17th in hot summer weather and the infantry were tired out,

but they fed and rested well that night.

Surely never had troops a fairer promise for the day of battle! and never did an army's morale seem in less danger! Yet we know that on the 18th no less than three serious panics occurred, any one of which might have had disastrous consequences, but for the fact that the French Generals were generally ignorant of what was going on in front of them, and when they were not, the disposition of the French ar ny was so faulty that nothing but local counter-attacks were possible.

It will be remembered that Steinmetz received his orders from Von Moltke about 10-30 A.M. on the 18th. They were that, pending the development of the movements of the 2nd army under Prince Frederick Charles, he should, at first, fight a containing battle only, attacking the French left, eventually, from the direction of the Bois du Vaux.

He might well have had 19 battalions on the northern edge of the wood by 2 P.M., but, instead of concentrating, he launched isolated battalions across the defile formed by the embankment of the Metz-Verdun road as it crossed the Mance ravine, straight at

the French position.

When, with the aid of the 8th Corps, acting independently under Von Goeban, these troops had captured the farm of St. Hubert, and had occupied a strong position in certain quarries at the edge of the plateau, Steinmetz jumped to the conclusion that the French were retreating in front of him, and ordered his 1st Cavalry Division to cross the defile in pursuit, supported by the artillery of the 7th Corps. Von Goeban had just moved a brigade of infantry into the defile to support St. Hubert where he foresaw a counter-attack.

This mass of troops thus came into the defile together 4 batteries leading, and within 300 yards of the French infantry holding the farm house at Point du Jour on the flank of the defile. Add to this, as Von Hoenig writes, "a wall of smoke in front, out of which the flames of the burning farm shot up, shells from 150 guns in action screaming over head, men crowding together, crushing the wounded, the cries of the latter and lowering over all a dense dust cloud which obscured the sun above. Imagine all this and try to realise the mental condition of men struggling to obey their orders."

Thirty-two squadrons were jammed together, the leading regiment and 4 batteries got through and the guns unlimbered. They were received with a storm of shot and shell; the limber teams, maddened with pain and with the noise, bolted back into the mass crushing many. At this juncture the "retire" sounded and all except the 4 batteries and the 4th Uhlans got back. Meanwhile over 10,000 infantry, densely crowded together, between the south of the road and St. Hubert, had got into such appalling confusion that all efforts to rally them proved hopeless. They dribbled away into the ravine by hundreds at a time.

The 2nd Corps under Franzecky was now forming up in rear close to Resonville.

The French Generals Le Boeuf and Frossard saw its Divisions approaching, and, though only dimly conscious of the confusion in front of them, judged the moment as a suitable one for a counterattack. The exhausted German skirmishers who had been holding the edge of the wooded plateau unsupported since 11 A.M. gave away before it. To quote a well known account, "in a wild access of panic they dashed up the slope and on to the front of their own batteries—in vain the gunners yelled at them and threatened to fire on them—in vain mounted officers threw themselves upon them sword in hand; the mob was mad with terror, and swept through the guns demoralising all they came in contact with."

The situation was only saved by the artillery, some fresh infantry pushed out on his flank by Von Goeban, and the fact that the

French stroke was badly supported.

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But worse was in store. It was now evening and growing dark. The Royal Headquarters had arrived, and the King, who had witnessed the last regrettable incident, in spite of Von Moltke's remonstrances, ordered Steinmetz to attack with all the troops he could

lay hands on.

This resulted in the 7th Corps crossing the ravine towards the quarries, and in 4 battalions of Franzecky's 2nd Corps moving over the fateful defile towards St. Hubert. Neither corps were aware that both localities were still held by hard pressed German troops and both opened fire in the growing darkness into the sorely tried and weary defenders of these localities. Many broke back from St. Hubert, overran the head of the advancing column and caused dire confusion.

It was now dark. Franzecky arrived at St. Hubert, and, apparently not realising that he had already far too many men for any chance of useful action on the ground at his disposal, ordered his 4th Division forward. The fresh troops literally groped their way across.

The nett result was that by 10-30 P.M. 48 battalions stood penned up like sheep, and almost as helpless, in a space 1,600 yards wide by 1,000 yards deep, and 300 yards from the enemy's muzzles. There they remained, always under a certain amount of fire, till

next morning.

Hoenig examines the question why if it was possible to endure the situation it was not possible to organise a night assault into the French position. He concludes that the climax of the day was the bankruptcy declaration of German tactical experts, and that the spirit was still there, as proved by the endurance of the men; we may agree with the rider that the spirit had been reduced to one of endurance only, and to a pitch of demoralisation incapable of further effort.

Surely, as Hoenig remarks, military history contains no parallel case.

Steinmetz, Franzecky and even the King himself had made the fatal error of looking upon their army as an instrument which could be relied upon under any circumstances. Never was a better instance of the truth of Henderson's words "Armies are not machines." It may be noted here that the German war regulations appear to be the only ones that provide officially for the prevention of straggling and skulking in battle. One N.-C. O. in each section has no squad to lead, and moves in rear of the fighting line to see that no one remains behind; part of the duties of the "field police" is to collect stragglers and to conduct them to the nearest troops.

On the French side, the army of the Loire, as was only to be expected from its constitution, want of organization and proper equipment, furnishes many instances of want of morale. The utmost misery and privations were undergone by the troops, who, be it remembered, were almost entirely gardes mobiles and locally raised levies. Lonsdale Hale writes: "Many men had no shoes, very few

possessed gaiters, cartridge boxes, knapsacks or camp equipment. They stowed away promiscuously spare things, food and cartridges in a canvas bag. The men received four days' supply of biscuit at a time and could only carry them by passing a string through them and wearing them as a sort of bandolier. The biscuits crumbled away by rain and snow and the men were consequently without bread; the cartridges in the canvas bag became too damp for use. The fire arms were of a most varied kind, from an 1815 model converted to an American Remington."

Yet so long as these corps, aided and abetted by the civil population, were able to confine their operations to the wooded and close country between Orleans and 40 miles south of Paris, they frequently repulsed the German force detached to check them, seriously embarrassed the German staff, and very nearly succeeded in raising the siege of the capital. Once forced out of the close country, and obliged to concentrate on Orleans, the exact worth of

the instrument became apparent.

It is on record that whole regiments of cavalry were employed in extended lines to turn back the infantry fugitives to the fighting line—groundless panics were common—and the accounts of the retreat into and beyond Orleans prove a condition of complete demoraisation.

The successes and the failures of the army of the Loire are very instructive reading, for it was a territorial volunteer army, operating in its own country, and in a portion of it much resembling parts of England. Our own army of defence may however well hope to be better provided in organisation, leaders and staff.

Before leaving this part of my subject I should like to recall to

your minds a pertinent episode of the South African War.

To stem the tide of invasion and rebellion very active operations were going on along the borders of Cape Colony towards the end of 1899.

Effective counter-blows were necessary and the General commanding the troops in a certain district arranged an operation of the kind. His plan, briefly, was to rail most of his troops 25 miles during the day, to march a distance of about 9 miles that night and to attack the Boer position at dawn next day—a sufficiently arduous operation for infantry only just off a long voyage.

The troops had their mid-day meal before entraining, which commenced at 12 noon, and was not completed till 5 P.M., and they took 1½ days' ration on them. From early morning till entrained in

the afternoon most of the infantry were on fatigue duty.

The two batteries R. F. A., one company R. E. and two battalions of infantry arrived without opposition at the end of their rail journey, and were there joined by three companies M. I. and some Cape Police who had come to the rendezvous by road.

No previous reconnaissance had been made of the route by any one who took part in the march, so that the guides had to be blindly followed.

The force moved off at 9 P.M., its R. E. machine guns and hospitals in rear. These took a wrong road from the start, dis-

covered it during the night, and halted till dawn.

The leading regiment of the column was ordered to march with fixed bayonets—a most wearying and useless precaution and the order is of itself a fair indication of the lack of perception which governed the proceedings. For four hours the column plodded on, when it became evident that the intended route had not been followed. By this time the infantry had marched 10½ miles over rough ground in the dark and were showing very unmistakable signs of fatigue; the discouraging rumour that the column had lost its way no doubt added to their depression. Both the Official and Times histories agree that the leader would have done better to have postponed what was now an extremely hazardous enterprise to another day, but, of boundless energy and iron physique himself, he could not appreciate the state of his troops. In fact he did not realise that, the instrument he was using might under the circumstances be expected to fail him.

The troops rested an hour and moved on at 2 A.M. From that time till daylight (4 A.M.) the wearied infantry stumbled along over ground which would have been difficult even by day. At dawn, though the General was aware that he was then close to the enemy, no precautions were taken, and it must have been evident to any soldier who thought about it at all, that the formation of the force, now moving along between hills, was courting

disaster.

Eventually fired upon in column of route, a succession of disjointed, and generally spiritless, attacks on the Boer position followed. The General led instead of directing; five companies of one battalion were prematurely withdrawn from the attack, and the one party that had succeeded in gaining a foothold close to a crest of the Boer position were unfortunately shelled by their own guns.

Retirement was ordered, and its execution is thus described

by an eye-witness:—

"The men retiring from the hill rushed to the donga for safety from the heavy rifle fire, and on getting into it laid down, and many went to sleep. Many men were by this time so thoroughly done up that they did not appear to care what happened to them. Many still remained on the hill, some because they had not heard the order to retire, and some because, utterly weary, they had sunk down to sleep in the dead angle at the foot of the height."

Over 500 men were missing besides 135 known to be killed and

wounded when all was over.

Parched with thirst, and half dead with fatigue, the rest of the infantry staggered back over the 11 long miles to the railway by mid-day. The steadiness and good shooting of the batteries, the presence of the mounted infantry, and a half-hearted pursuit by the enemy, alone saved them from destruction.

A promising undertaking ruined in its execution by several untoward circumstances—some unavoidable, most avoidable—but above all by want of consideration of the amount of physical endurance that could be expected of the infantry employed if success was to be hoped for.

I have not quoted from the World's Last Great War in the Far East for several reasons. Failure in morale was no doubt uncommon in the Japanese army imbued as it was with the wonderful spirit of "Bushido". The Russian is a stubborn unemotional soldier

not much troubled by over-civilisation.

Events are too recent for the true inwardness of many occurrences to have assumed their proper perspective, and reliable records are as yet scarce. Neither nation favours the candid historian.

Among occult influences affecting the soldier, in common with the rest of the world, is that known as the psychology of crowds. The subject repays study.

It is well known that a sudden impulse will affect men when congregated together and under emotion of any kind, and produce

often most unexpected concerted action.

Maude concludes a lengthy enquiry into the subject by writing that "bodies of men engaged in collective operations generate a psychic force which can be felt though it cannot be measured." Again he writes that "the knowledge of how to sway a multitude is an attribute of great commanders and implies a clear conception of the resultant thought wave.

Latin races are most susceptible to this influence, and it is easier for a great leader to generate the wave in the quick intuitive

French mind than in the more stolid Anglo-Saxon brain.

Napoleon seized the dominant thought wave of the French

nation, and, by sheer force of will, turned where he wished ".

The French staff, faced with the wave of socialism and the increasing dislike to military service, which has resulted in the dangerous shortening of the period with the colours, are almost in despair of being able to keep up a properly disciplined army. Realising however this susceptibility in their people and army they have made a scientific study of the matter, holding that, by creating favourable conditions, they will be able to turn the passions of the race in one united whole upon their enemy.

It is probable that there are times during most modern battles when the majority of the infantry engaged, possibly on both sides, in particular parts where the stress has been, and is, heaviest, are reduced, temporarily, to nothing more than armed crowds swayed by instinct alone. "Collective character" then outweighs "personal

opinious "

It seems possible that a crowd of soldiers is more likely, by reason of their previous common training, to be moved to unanimous action than any other crowd of men; in short, possesses more "collective character."



The result of the wave of instinct, mysteriously and instantaneously communicated, may be to produce an advance which nothing can withstand, a halt which no leading can stimulate, or a retirement which no threats or blows can stop.

There is possibly a fleeting moment when it is a toss up which

of the three actions is going to be taken.

It is here the true leader comes to the front. He has foreseen the stress, he has taken the opportunity of the "silence which usually denotes the moment of coming under serious fire" to say a word to his men that will remain with them when all but instinct has deserted them—he is in such close touch with them that he sees the psychological moment arriving—and he alone is able to turn it into glorious action which will make them bad to beat for the rest of a campaign.

The company or squadron leader has indeed more to think about than is laid down in any text-book on drill or training, and this important part of their duty demands as deep a study of military history in regard to humanity, as the rest does of military

history in regard to tactics.

The tendency of the world as it becomes more and more civilised is towards democratic forms of Government. In some countries, as in our own, the sovereign head remains, in others democracy rules in

the form of a republic.

Can the same devotion be expected from an army employed by a republic as from one sent to battle by a despotic or constitutional sovereign? The feeling of personal loyalty counts for much with the soldier. It is difficult to imagine an English, German, Russian or Japanese soldier without it. It is a sentiment that has, we know,

often been appealed to with striking effect.

As argued in the case of the American War, a republic has levelling tendencies which must be dangerous to the well-being of armies. With the Anglo-Saxon races democracy implies the highest form of freedom—freedom to the individual to rise as high as his abilities will carry him—and, therefore, be the race ruled by a constitutional sovereign, or be it a republic, the democratic spirit is eventually little harmful to the soldier. Among the Latin Gallic races the tendency is to level down instead of up. A bas is the national expression of it in France. When the democratic spirit takes this form it becomes an insidious enemy to an army, and works towards depriving the soldier of those feelings of loyalty, respect for, and confidence in his leaders which should go far to sustain him in the stress of battle. We may well hope that the English equivalent of the ominous cry en avant les epaulettes will never be heard in our army.

Whatever may be our conclusion as to the effect of democracy on the fighting man, there can be little doubt that socialism has a

wholly evil influence.

Its presence in conscript armies is a factor that cannot be neglected, and, as socialism increases in a nation, so its conscript soldiers

become more undependable. Its spirit is antagonistic to war. One great safeguard the world has against it is that its exponents refuse to recognise the true influence war has exerted, and always will exert, in the formation of national character. A nation of socialists by refusing to fight, if from no other cause, must become hewers of wood and drawers of water, or as extinct as the Dodo.

The inevitable presence of the socialist element in conscript armies has always seemed to me a strong argument against such an

army for England.

There may be in our country a tiresome apathy towards the soldier, but we have never known that active spirit of anti-militarism which is a national danger on parts of the continent of Europe, and which is akin to socialism, if not entirely of it.

Latest developments at home seem to show that the recognised leaders of the Labour party are beginning to realize that to be prepared for war is the best way of securing peace. When the "Clarion" is found among the prophets one may conclude that socialistic doctrines are not, as yet, doing much harm to England's navy or army.

It is asserted that military service actually tends to an increase of socialism in France, and this is attributed to the very severe code of punishments, but the fact is that the severity is necessitated by the prevalence of anti-military socialistic doctrine; and by the levelling down tendencies of the republican spirit of France herself.

This appears to be proved by the different results of military service on the manhood of Germany and of the sturdy Swiss Republic. Large numbers of socialists join the ranks and give some trouble, but it is found that they return to civil life better and more sober minded citizens.

To sum up what it is thought may be learnt from the subject of this lecture.

First as regards the effect of moral influences upon armies.

The ordeal of modern fighting makes it more than ever necessary that the commander shall know the exact worth of the instrument he is using at the time, or, in other words, put his

finger on the pulse of his command and keep it there.

The maintenance of enthusiasm, confidence and loyalty is of vital importance in any army. Criticism from within must be suppressed. This can only be effected by a high sense of discipline and by self-restraint among officers. Once the "crabbing" spirit gets abroad it becomes a canker on the morale of an army. The Federals found it so in 1860, and our own later experiences prove that we are by no means free from this malignant growth. It is to be noted that the two most successful armies that have made war in the last 50 years were remarkably free from this crabbing spirit.

Clausewitz points out that in war "everything is simple but the simplest thing is difficult. These difficulties accumulate, and produce a friction which no man can imagine who has not seen war."

It is this, he explains, which distinguishes real war from war on paper, and it must be remembered that manœuvres, or peace training for war, stop short exactly at the point at which this friction becomes an appreciable quantity. Officers and men are utterly wearied, unstrung, and out of temper. Horses and transport animals are under-fed, and over-worked and therefore unwilling—fog may prevent reports from arriving, or artillery or cavalry from seizing the right moment for action—mud delays marches, and so mars the effect of a concentration.

In fact each living atom of an army, as well as outside circumstances often appears to be (unconsciously) conspiring to thwart the will of the commander. The enormous friction thus produced is, Clausewitz says, "not concentrated, as in mechanics, at a few points, and is therefore everywhere brought into contact with the element of chance. Thus incidents take place upon which it is impossible to calculate."

The knowledge of how much weight to give to this friction, and when it is necessary to allow for it, is only to be gained by experience in war. This knowledge therefore, combined with the strong will to overcome the friction, is an attribute of a great leader, and necessary for the proper exercise of the art of command.

The enormous importance of an efficient staff, conversant with their duties in war becomes apparent here. Ignorant staff officers

double friction everywhere.

The ascendancy of democracy does not appear to be eventually baneful to the morale of Anglo-Saxon fighting men, for, with their race, it means freedom; but the levelling down tendency of Latin-

Gallic democracy is certainly a harmful influence.

Socialism is a great enemy to discipline and morale, especially in conscript armies. The British soldier, under our voluntary system, being of the most truly free nation of the world, being untainted by politics or socialism, and, by constitution, less emotional than most men, should, and does, possess a very high and lasting form of morale. He also has a callousness to danger, probably due to want of imagination, which is a valuable and peculiar asset in battle. This same want of imagination, by the way, renders him a difficult subject to train in peace, and often leads to that tiresome condition commonly known as "fed up".

The study of historical instances would seem to show that what may be described as great panies are usually produced by bad major tactics. The best troops so mishandled may be reduced to utter demoralisation with startling rapidity. The 2nd Corps as they moved through Gravelotte at 7 P.M. on the 18th August 1870 marched past the King with bands playing, officers saluting, and in all the pomp and circumstance of war. Less than an hour later they had joined the inert mass below St. Hubert, and were no more fit for effort than the rest, and the débacle came about with but little loss from French shot and shell. It will be found in most cases of lesser failures or panies that the troops were exhausted and depressed,

as in the South African episode I have quoted, or in a terrain unsuited to their form of action, such as cavalry in dense forest, or infantry in a defile, that the commanders have neglected precautions, and that, in censequence, the men have become, almost unconsciously perhaps, nervous and fidgetty—something startling occurs, and panic may follow swiftly.

This brings us to the connection between health and morale.

In these days of high civilisation—town bred soldiers and the nerve strain of life and war—this is a factor that is more important than ever.

Certainly if the British soldier is to fight at the top of his form he must be well fed. Inventive genius should be applied to the problem of how to cook for and to distribute food and water to troops in the stress of a modern battle. We are behind other armies in the matters of mobile kitchens and the like. The supply of food and drink to the fighting line is as important a problem as the supply of ammunition, and far more difficult. The Russians in China in 1901 had an excellent cart kitchen drawn by mules. The Americans are now making experiments with what they call a "field cooker". It is apparently a box, worked on the vacuum principle, something of the same kind as the "Thermo" bottle introduced into this country. It is stated that it completes the cooking of half-cooked stews, etc., in the trenches "while you wait," and it is altogether quite American.

Finally, I should like to put in a plea that when military history is being studied, attention should not be entirely rivetted upon the strategy and tactics of the particular campaign under notice to the exclusion of considerations such as I have attempted to put before you—I was discussing my subject, from this point of view, with a well read friend of mine the other day. He told me that, after reading the best histories of any particular war for its lessons in strategy and tactics, he found it most useful to read the personal memoirs of some individual officer who had taken part in it; these supplying what may perhaps be called the human knowledge necessary to form a complete judgment of the whole matter.



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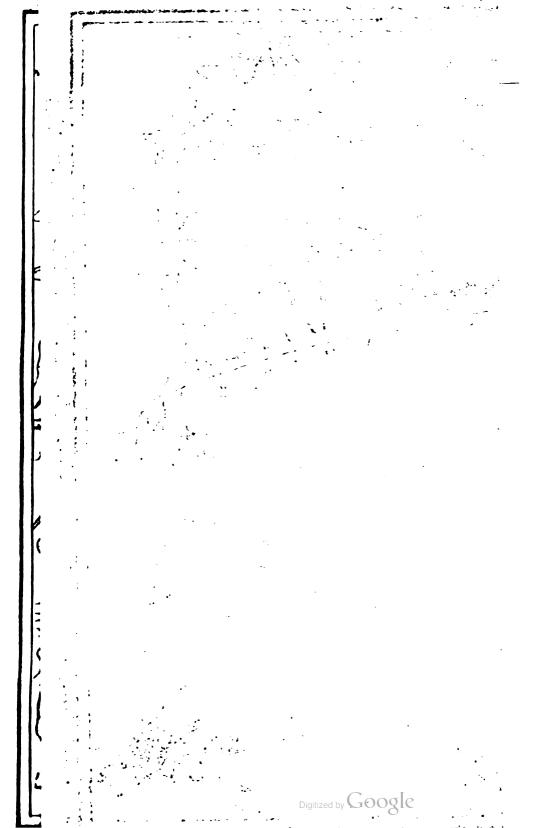
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### FIFTY DAYS IN A MULE TRANSPORT.

### BY MAJOR E. DEV. WINTLE.

Having lately been employed in bringing some 1,550 mules and donkey stallions from New Orleans to Calcutta, a voyage of 13,000 miles and lasting seven weeks, a few details of the undertaking may prove of use to others who may hereafter be similarly employed.

The vessel chartered for this purpose was the SS. "City of Edinourgh," (Captain A. J. Elliott), belonging to Ellerman Lines, Limited, a large four-masted ship of 6,254 tons, built of steel, with iron decks; length 473 feet, breadth 54 feet, with a short well deck fore and aft.

Having been originally built for the cattle trade, this ship is provided with 10 hatches instead of the usual five or six. Since the hatches are the chief means of communication, lighting, ventilation and sanitation, it is obvious that the vessel was particularly adapted for the conveyance of such a large number of animals on such a long voyage.

Her tanks are capable of holding 2,500 tons of water, and her

coal bunkers 3,200 tons of coal.

To obtain the greatest possible stability she was ballasted with 600 tons of coal and 300 tons of sand.

The ship was fitted up for the accommodation of the mules and donkey stallions at Glasgow by Messrs.

Barclay. Curle and Co., as follows:—

Upper	deck	standings	for	•••	375	animals.
Main	,,	,,	,,		545	,,
'Tween		,,	,,	•••	574	,,
Fore he	old	,,	,,	•••	<b>4</b> 8	,,
Aft dec	k	,,	••	•••	42	,,
			Total	1	.584	

The number for which accommodation was originally required was 1,561, thus giving 23 spare. Though below the percentage of spare accommodation usually considered neccessary it should be sufficient, but should consist of single stalls placed where most fresh air is obtainable, as it is not always possible to remove sick animals to the upper deck.

Upper Deck.—To obtain the necessary accommodation, the well decks were roofed in, thus making the top deck flush from bow to stern.

Stalls or pens were constructed along each side of the ship, throughout its entire length and were divided off into spaces for six animals, allowing two feet for each. Some mid-ship stalls were also erected; one set fore, and the other aft.

Houses for the muleteers were also erected on this deck; one house and its cook house or gally forward, the other aft.

A latrine for the muleteers was erected on each side of the ship aft.

Main Deck.—Rows of stalls were erected on this deck according to space avaliable, viz., from two to four rows of stalls, with two alleyways or paths four feet broad running along the entire length of the ship. On this deck, aft, were the single stalls for the donkey stallions. Sixty single stalls were provided as it was at first thought that there would be 54 stallions. The number that came on board was 47. The division boards of some of the spare stalls was taken down, so as to give some of the stallions a loose box. This did not prove beneficial, as it was found that, unless tied up, the stallion bit himself severely.

'Tween Deck -As many as five rows of stalls were in places con-

structed on this deck, with three alley-ways instead of two.

The space on each side of the engines on this deck was too hot for mules. Hay was at first stowed here, but when consumed, a free passage was available along the whole length of the ship.

The Holds.—There being no deck at the bottom of the ship a flooring was made of coal, which having been trimmed or levelled was

then boarded over, and stalls erected on this.

There were no mid-ship stalls in the holds. The holds were found to be the coolest place in the ship.

All animals on board stood athwart the ship, none fore and aft.

The upper deck standings were roofed in, so differed slightly from those of the other decks.

Two rows of "cants" or baulks of timber having been laid along the deck 7 feet 6 inches apart, marking the front and rear of the stalls, were first bolted down through the iron deck.

Stanchions or uprights were then set up four feet apart from centre to centre along front and rear cants, and bolted to them, on their inside edge.

The rear stanchions were fastened by strong iron hooks to the

side of the ship.

The stanchions were 8 feet in height along the front of the

stalls and 7 feet 2 inches in rear, that is, at the ship's side.

Scantling beams to support the roof were bolted to the top of each front and rear stanchion, and rested on another beam fixed along the rows of stanchions.

The above formed the framework of the stalls.

It will be observed that each piece is "bolted" to the other. In rough weather there is always a certain amount of straining. Bolts permit of a play where nails would draw.

The dimensions of the timber used in the framework were—

Cants 6 inches thick by 4 inches broad.

Stanchions 4 , , , , 6 , , , Beams 4 , , , , 3 , , ,

The roof, back and sides of the stalls were of "feather and groove" boarding, 1½ inches thick.

The back and sides of the stalls were nailed inside the stanchions,

the advantages being-

(i) A smooth surface was obtained next to the mules.

(ii) More strength to resist kicking.

In rough weather it is very undesirable that there should be anything with sharp square edges against which the mules might be thrown.

The mules kicked through the back boards in many places. A long voyage seems to make them very peevish, but not bad tempered, as they rarely bit or kicked any of the men.

The disadvantage is that a heavy sea would very soon drive in the back boards. The Captain would avoid this happening by slightly altering his course.

During this voyage it was necessary on one occasion to go about

for 12 hours to save the upper deck standings.

To make the stalls more rigid, they were "tied" together across the deck at intervals by beams 6 inches by 4 inches.

The difference between upper deck stalls and those below deck was:—

(i) That the stalls below deck had no wooden roof.

(ii) The back boards were only 4 feet 3 inches high and the planks were erected perpendicularly and 3 inches apart.

To separate the mules, the stalls were, as has been already mentioned, divided up. This was partly necessary to avoid the ship's fixtures, and also to prevent the mules falling about in rough weather. A slot was made by a couple of strips of wood nailed to stanchions in front and to the back boards in rear. In these, four pieces of plank, 8 inches broad by 2 inches thick were inserted. At each end of the plank a small strip of wood 1½ inches thick was nailed on each edge, so that when in position there was a space between each plank to allow a passage for air. The division boards were easily removed for cleaning stalls.

The "breast boards" were placed along the front of the stanchions resting in iron cleets 4 inches broad. The top of the

breast boards was about 3 feet 10 inches from the deck.

The breast boards were made of wood 10 inches broad by 3 inches thick, rounded at the top and covered with tin. The stanchion from the top of the breast boards to a height level with the top of the mules' heads was also enveloped in tin. This is to prevent cribbiting. The mules gnawed all wood within reach.

Wherever any woodwork was gnawed it was at once painted over with tar, which the mules did not seem to fancy. On the bottom edge of the breast board two iron rings for each mule were fixed with staples. These were for the head rope. Two rings were supplied, presumably because it was thought that each mule would have a double head rope. One ring seems sufficient.

The bottom edge of the breast board should be rounded off, not square, the head of the staple of the ring should also be round. Several mules sustained severe wounds by bringing up their heads suddenly when feeding.

The length of the breast boards varied from 8 feet to 2 feet 4 inches according to circumstances, the ship's fixtures often necessitat-

ing a short breast board.

In tying the head rope to the ring on the breast board, a slip-knot is most essential, so that by pulling the slack end of the rope it at once comes undone. If a half hitch is tied, it cannot be undone if an animal falls or gets his fore leg over the rope. Animals on boardship seem much more nervous than on shore, and struggle considerably.

Long wooden "stops" I foot long by 3 inches broad are loosely fixed to the stanchion just above where the breast board rests in the cleets, so as to prevent the mules throwing up the breast boards with their heads.

The bottom boards on which the animals stand when the decks are of iron consist of planks one inch thick with four transverse battens. Two of these are fixed 1 foot and 2 feet respectively from the front edge and the other two battens at the same distance respectively from the rear edge. A firm foothold is thus ensured for both the fore and the hind feet.

There are two battens, one on each side under the bottom board to raise it off the deck and to allow urine to escape.

All the standings on completion should be thoroughly white-washed.

It is a great convenience, especially when embarking the animals, to have painted in large figures on the back of the stall the number of animals it is to hold.

Just under the roof of the upper deck stalls a canvas curtain was adjusted. This was usually rolled up. Its object is to shelter the animals from very cold winds or from any spray that may come over.

Salt water appears to blister the animals, so it is as well to have something to protect them from it.

The curtain spread out level with the roof affords excellent protection from the sun on a hot day, without keeping out the air.

The fresh water-supply pipe was carried along the top of the stanchions, well above the heads of the animals. Water cocks were fixed into the pipe at intervals and the water passing through a canvas hose poured into large tubs placed below it. From the tubs the water was carried in pails to the troughs hanging on the breast board before each animal. These troughs are of zinc and are known as "Admiralty Pattern".

The wire for the electric light, with which the ship was lighted throughout, was also carried along the top of the stanchions. A few slinging stalls were supplied on each deck. Slings should never

be used in rough weather, as the animal would be badly knocked about.

Communication between one deck and another was obtained by "brows" or sloping gangways suspended in the hatches.

To avoid sharp turns, at least two hatches are required for each set of brows; for instance, using No. 1 hatch to descend from the upper to the main deck, No. 2 hatch would be used to descend from the main deck to the 'tween deck. From the 'tween deck to the hold, No. 1 hatch would again be used, but the lower brow should be to one side and not be immediately below the upper. The noise of the animals going up or down the upper brow would alarm those on the lower brow. The footway of the brows was made of 3 inches wood with transverse battens, one foot apart from the centre of one to the centre of the next. The battens were 3 inches broad and 2 inches thick. The breadth of the footway was 6 inches. The height of the sides should not be less than 5 feet to prevent the animals seeing over and becoming frightened. Hooks made of 1 inch iron and 3 inches broad fitted on to the brow at each end suspend it to the iron sides of the hatch. Care should be taken in adjusting the brows in the hatches that there is sufficient head room allowed at each end of the brow for the class of animal which the ship is to carry. The brows were perhaps unnecessarily heavy. Two inch wood would have been thick enough. The parts were all bolted together.

A complete set of brows led from the upper deck to the fore

hold, and another set from the upper deck to the aft hold.

Small brows were placed on each side of a bulk-head door, and over gratings or covers of steam-pipes, to enable the mules to pass over easily.

Each hatch on each deck must be protected by a guard rail, otherwise mules approaching a hatch might become alarmed, and a

serious accident might occur.

Guard rails are also necessary to protect the men from falling

down the hatches in rough weather.

A wooden grating is placed over the hatches on the upper deck in rough weather, and a tarpaulin placed over the grating. The hatches on the decks below remained open.

Attendants. To attend to the mules the Mountain Batteries in India were called on to furnish—

- 1 Havildar.
- 2 Naicks
- 2 Lance-Naicks.
- 44 Mule Drivers.
- 49 Total.

Two Salutris and two Jemadar syces were also detailed by the Army Remount Department.

Having been despatched to England they joined the "City of

Edinburgh" at Glasgow.



On arrival in December they felt the cold considerably, and they were eventually provided with a pair of thick drawers and a vest. These necessary articles could, with advantage, be issued before leaving India. It was also very cold on the voyage to New Orleans and extremely cold at that place on arrival in the third week of

Though the men all worked most indefatigably and cheerfully throughout the voyage, it is doubtful if they would have been able to devote as much attention and care to the animals and maintained the necessary cleanliness and sanitation had not the Captain of the ship co-operated most thoroughly by telling off the crew to certain

duties.

The crew consisted of —

2 Apprentices ... Europeans.
3 Carpenters ...

22 Lascars

The Quartermasters and Apprentices were constantly employed

in repairing damaged head ropes.

The Apprentices were employed in weighing out the fodder daily, and in inspecting every 4 hours the 12 thermometers placed in various places in the ship.

The carpenters were kept constantly employed in repairing the woodworks, attending to the water-supply, opening and closing of

port-holes.

The Lascars drew the daily supply of fodder up from the holds and distributed it to the various parts of the ship. They worked the winches which hoisted up the large dung baskets and emptied the contents overboard.

They kept all the scuppers clear and disinfected them with

phenyle.

Most of the foul air came up through the hatches, but of the 29 ventilators with which the ship is fitted, Ventilation. eight were fitted with electric fans to draw up the foul air. The fans were kept going night and day.

The mouths of up-take ventilators must be turned away from the wind to permit the foul air to escape. To enable the officer on the bridge to see at a glance if the up-take ventilators face the

proper direction a large "U" should be painted on them.

All the 29 ventilators had been lengthened to bring their mouths well above the roof of the upper deck standings. In addition to the iron ventilators there were 12 canvas wind-sails, 30 inches in diameter, with square heads, hung up in the hatches, some to one deck, some to another.

The wind-sails and ventilators acted excellently, and were most invaluable in reducing the temperature below decks. Whenever possible the four loading doors on the main deck were kept open. The port-holes were supplied with wind scoops. The port-holes on the tween deck were opened as often as possible. For the first month it was only possible to open those on one side of the ship owing to the seas on the other side.

Port-holes on the 'tween deck have often to be closed very suddenly, owing to a change of weather or a heavy swell coming up. The division boards should therefore be arranged to come within reach of each port-hole to enable men closing them to climb along the boards. It is not safe for any one to go among the mules packed closely together as they are. To remove the mules from the standing takes time when the men are all present. At night when only the sentries are present it would be impossible.

It should be impressed on the muletcers that under no circumstances are they to open a port-hole. This is only done by a member

of the crew, acting under the direct orders of a ship's officer.

The upper deck stalls had at first no openings in the back. It was found necessary to cut openings, which were closed by a sliding panel. The carpenters cut the openings and fitted on the panel in a very short time and with most beneficial results. The size of the openings depends on the wood available on board to make the panel.

To clean out the standings all the mules in the first standing were taken out and fastened up in the most convenient place, near a hatch or in the alleyway.

The dung was then shovelled out into small baskets. On the upper deck these were at once carried to the open spaces in the standings necessitated by ship's fittings and from there emptied into the sea. Below decks, large baskets were collected in the hatches and the small baskets emptied into them. When the large baskets were full they were hoisted up by means of the derricks and steam winches, hauled to the side by some of the ship's crew standing on the roof of the upper deck stalls and emptied into the sea. As soon as all the dung was removed the standing was carefully brushed and then sprinkled with McDougall's carbolic disinfecting powder.

The division boards being removed, the mules from the next standing were moved into the clean one and the division boards replaced. The mules of the first standing cleaned were finally put into the last standing. By this arrangement mules in unfavourable parts of the ship were not retained there permanently.

When taken out of their standings the mules were examined

to see they had no wounds or swollen limbs.

At first the men were only able to clean out half the standings each day, but they soon got accustomed to their work and the mules got to understand what was required of them, and in a short time

every standing was cleaned every day.

Holes had been cut in the cants of the mid-ship standings to allow the urine to escape into the alley-way. It was then brushed towards the nearest scupper, where it ran out into the sea. The word "Scupper" was painted in large letters over the aperture, so the men saw at a glance which way to brush.

It was found that gypsum absorbed moisture more satisfactorily than McDougall's carbolic powder, so it was always used in the alley-ways The bottom boards were removed once a fortnight. All dirt underneath was removed and the deck sprinkled plentifully

with gypsum.

It was impressed on the men that standings and alley-ways must be kept as dry as possible. After watering the mules, the alleyways were always swept and sprinkled with gypsum. In the holes, the urine percolated through the coal into the bilge-water. Every day phenyle was poured through the sounding holes in the upper deck into the bilge-water, which was periodically pumped out.

The air below decks never smelt foul during the entire voyage,

Previous to the arrival of the "City of Edinburgh" at New

Orleans the mules and donkey stallions had all been brought down to the vicinity of the wharf.

From the ground where the mules were encamped to the wharf, a passage broad enough for mules in single file was railed in.

On the wharf this passage broadened out into a small enclosure, out of which two passages led to the loading doors in the ship's side.

The loading doors were approached by brows with high sides similar to those on road.

After coaling was finished and the hay which was supplied here had been placed on board, there was only sufficient daylight to allow of the 47 donkey stallions and 240 mules being put on board. The remaining 1,362 mules were settled in their standings on board next day in eight hours.

Before coming on board the mules were each supplied with a head stall and head rope. The head stalls were of leather and lasted well, in spite of their

being considerably chewed.

The mules seemed to like the head ropes, which were made of something closely resembling "Surkunda" grass. Though the ropes had been soaked in a decoction of aloes the mules sucked and chewed them incessantly.

Some head ropes were made up from the ship's rope, commonly known on ships as "Europe Rope." They remained untouched

throughout the voyage.

It was previously mentioned that the hay for the mules was put on board at New Orleans. It was of exceptional quality and was consumed eagerly by the mules. It however had been pressed very badly. The usual measurements of bales of hay for loading on boardship are said to average from 130—150 cubic feet per ton. These bales varied from 220—250 cubic feet per ton, and considerable difficulty was experienced in getting the large quantity required on board the ship.

The bales were also found to vary in weight from 40 lbs. to 140 lbs. The disparity being so great it was necessary to weigh

out daily the amount required, instead of issuing so many bales. There is never too much room on board a ship, so it took some time each day to weigh out from 180—220 bales to make up the day's ration.

The following time table will give an idea.

Routine.		The following time-table will give an id-
		of the day's work :—
5-45	A.M.	Water.
. 6-0	,,	2 lbs. hay per mule.
6 - 15	,,	Commence cleaning standings.
7-30	,,	Issue of fodder for day from hold.
10-0	<b>)</b> :	Issue of ½ oz. salt per mule; water.
10-30	,,	Donkey stallions exercised and groomed.
11-0	,,	Issue 2 lbs. hay per mule.
12 noon		"Break off."
2-0	P.M.	Water.
2 - 30	,,	Clean standings.
4-30	,,	Donkey stallions exercised.
5-30	,,	Issue ½ oz. salt.; water.
6-0	,,	Issue 3 lbs. hay per mule.
8-0	,,	Do. do.
9-0	,,	Night sentries posted.
	A.M.	Do. changed.
T4:11	h	n that alconing stulls and fooding the mules too

It will be seen that cleaning stalls and feeding the mules took

up practically the whole of the day.

The donkey stallions were brushed every day on the face, neck and back. Having very heavy coats they felt the heat and were

perpetually rubbing themselves against the boards.

It was found that a short walk reduced the swelling of the testicles which long standing engendered. Sufficient space was only available to exercise six at a time. That number were exercised every morning and evening. It was not possible with so few men to groom the mules at all, and except when moved to clean their standing they got no exercise, there being no room to do so.

watering. It will be noticed that the mules were watered four times daily. They were always eager for the water.

Previous to getting their water, ½ an ounce of salt was put in the troughs. They at once licked this up. Any salt left was dissolved in their water. On very hot days their troughs were filled up with water after they had their usual drink.

At night, sentries had orders to give water at once to any animal appearing distressed and having a difficulty in breathing.

Generally the distress abated at once.

On coming on board, bran was issued to the mules and donkey stallions. They all refused it. For nearly a fortnight various plans were tried to make them eat it, such as mixing small quantities of either maize or oats with the bran. The maize was also placed on the top of the bran and this they refused. A hot bran mash was tried, but without success.

Thinking that they did not like the trough, the feed was placed on a cloth on the deck. This succeeded no better.

Finding that the bran and grain were only being wasted and that the mules were apparently doing very well on 10 lbs. of grass per mule per day, the bran and grain ration was discontinued, and the mules kept very fit on the hay alone. With half a dozen sick mules the experiment was tried of chopping the hay up and mixing a large quantity of chaff with a small quantity of bran. This they took to, and the chaff was gradually reduced and the bran increased. As soon as the chaff was reduced to a minimum they got their ordinary 10 lbs. of hay in addition to the bran, and did very well, but it was an impossibility to chop up sufficient hay daily for 1,550 animals.

The hay was given in small quantities at a time. This was to prevent the mules wasting it by trampling on it, consequently every scrap of it was eaten. Considering the large number of animals there was very little sickness, and it seems in a great measure due to the mules getting plenty to drink and getting no grain to heat the blood and induce constipation. On a long voyage under-feeding is better than over feeding.

It has been mentioned that mules appear to get very nervous during a long voyage and that when they get a leg over a head rope or in any way entangled, they struggle considerably. On this account it is advisable never to leave the mules unwatched. During the "break-off" in the middle of the day, between 6 P.M. and 8 P.M. and from 9 P.M. till 5-45 A.M. there were two men looking after the mules on each of the lower decks. During the day there were so many people passing to and fro on the upper deck that special sentries were unnecessary, but all through the night there were two sentries on duty.

While the simple ration of hay seemed to suit the mules so well,

a great deal of their immunity from sickness
must be put down to having had very little
excessive heat.

The route taken after leaving the Mississippi River was by the North-West Providence Channel through the Bahama Islands. This channel passes south of the Great Abaco Island

On reaching the Atlantic Ocean a straight line was made for the Cape of Good Hope. The North-Eastern Trade Winds were steady and kept the ship cool. There was very little rain in the Doldrums, but there were a few days which were trying to the mules on the Equator. On getting into the South-East Trade Winds it cooled down again.

It was unusually calm going round the Cape and only blew hard just as the ship was getting into Durban. Previous to arrival of the ship it had been very hot there, but the wind reduced the temperature and was followed by rain. The mules therefore had cool weather while at anchor. The voyage was then continued through the Mozambique Channel, passing to the east of Johanna, one of the Comoro Islands round the Seychelles Islands through the Maldive Islands to the east coast of Ceylon and from thence up the Bay of Bengal. On the south side of the Equator the South-East Trade Wind still kept the ship cool until she hit the North-East Monsoon which continued up to the head of the Bay of Bengal. It will be seen that as regards smooth sea and cool weather it was a remarkably fortunate voyage.

The highest temperature recorded in the ship was 94° and the lowest 63°; although 94° is not a high temperature.

Temperature. ature in the open air, it is quite sufficiently trying to animals shut up between the decks of a ship. As the temperature rose, some cases of very high fever generally occurred.

The following list of cases treated will give an idea of the ailments from which a ship load of mules are likely to suffer:—

118	kely to suner	' :			
Fever		•••	•••	24	cases.
Wounds from bites,	etc.	•••		24	"
Rheumatism	•••	•••	•••	1	"
Lameness	•••	•••	•••	4	,,
Pneumonia	• • •	•••	•••	1	,,
Conjunctivitis	•••	•••		3	,
Contusion	•••	•••	•••	5	,,
Catarrh	•••	•••	•••	7	,,
Ulcer	•••	•••	•••	1	,,
Tymphangitis	•••	•••	•••	5	,,
Colic	•••	•••	•••	в	36
Constipation	•••	•••	•••	1	23
Enteritis	• • •	•••	• • •	1	"
Congestion of lungs	•••	•••	•••	3	,,
Paralysis	•••	•••	•••	1	υ·
Heat Apoplexy	•••	•••	•••	3	,
Abscess	•••	•••	•••	6	
Hæmaturia	•••	•••	•••	1	,,
Oedima	•••	•••	•••	7	
Paraphimosis	•••	•••	•••	1	, .
Mange (Kharish)	•••	•••	•••	4	"
Tumour	•••	•••	•••	3	"
Concussion of brain	•••	•••	•••	2	>>
m, , , .					_

The deaths that occurred during the voyage numbered seven and all except one occurred before reaching the Cape of Good Hope. Six of the above casualties were mules, and one donkey stallion.

The cause of death being-

1 case of pneumonia.

2 cases of concussion of brain.

2 ,, of heat apoplexy.

1 case of congestion of lungs.

On a death occurring it is at once entered in the ship's log. On arrival at the port of disembarkation, an extract from the log should be obtained, giving the following information:—

1. Description, Number, Sex, Age.

2. Date of death, Longitude and Latitude in which the animal died.

This extract should be signed by the Captain.

Grain and fodd		The quantity of grain and fodder shipped at Glasgow for the mules was as follows:—				
$62\frac{1}{2}$	Tons crushe					
$62\frac{1}{2}$	Do.	oats	4ŏ.	145 "		
440 4	Do.	hay				
170	Do.	bran	do.	112 "		
$2\frac{1}{2}$	Do	salt in	casks of abo	out 500 lbs.		

The following is a list of gear necessary:-

# List of Gear and Disinfectants.

Large Slinging	Baskets			15
Small Do.				50
Iron Forks		•••		60 Unnecessary.
Shovels				30
Wooden Hoes	•••	•••		60 Unnecessary.
Steel Scrapers	•••			50
Bass Brooms				70
Iron Buckets	•••			70
Mule Strings			• •	20
Curry Combs				30
Dandy Brushes				30
Mops		•••		12
White-wash Bru		• •••	•••	12
Corn Crushers	•••	•••	•••	2
Chaff Cutters	•••	•••	•••	ī
Large Sponges		•••	•••	40
Linseed	•••	•••	•••	1 ton.
Lime	•••	•••	•••	1
Vinegar	•••	•••	•••	- ,,
Peck Measures		•••	•••	50 gallons.
0.0	•••	•••	•••	.,
3 Quart ,	•••	•••	• • •	6 ,,
MaDangall'a Di	einfacting	Damilan	···	6 "
McDougall's Di	simeeting	rowder,		mule per diem.
Phenyle Curenn	•••	•••	l pint	,, ,, ,,
Gypsum	•••	•••	3 oz.	",
Hurricane Lant		•••	24	
Spring Balance	s		2	

List of Drugs.

# 10 lbs. Crude Carbolic Acid.

10 ", Sugar of Lead. 10 ", Sulphate of Zinc.

# List of Drugs.

10 gallons Linseed oil. 8 oz. Iodoform. 400 lbs. Epsom Salts. Citrate of Potassium. Tincture of Opium. .. Asafætida. gals. Spirit of Nitrate Ether. 1 lb. Sulphate of Copper (crystal). 4 oz. Belladonna (fluid extract). 5 lbs. Camphor. 10 Linseed Meal. 3 (tins) Soft Soap (green soap). 5 Boracic Acid. Potassium Permanganate. 5 Ginger (ground). 4 Aloes-Baradoes. 200 grs. Strychnine in 1 gr. tablets. 5 lbs. Nux Vomica (fluid extract). Digitalis ( Croton. 10 Chloride of Ammonia. 2 Alum, powdered. 8 Vaseline. Bichloride of Mercury (7 gr. tablets). gals. Treacle. Turpentine. 4 lbs. Liquer Ammonia. Stockholm Tar. 4 qts. Acetic Acid. 1 lb. Tincture of Iodine. 50 yds. Bandages, cloth. 100 lbs. Carbolised Tow. 2 doz. Sponges, small. Corks (assorted sizes). 1 Phials, narrow mouth, 8 oz. wide mouth, Galley Pots. Bottles holding 2 quarts. 2 Pestles and Mortar, wedgewood, medium. 1 doz. Clinical Thermometers. 4 Pewter Syringes, 2 oz. 1 doz. Veterinary Needles. Silk Sutures. 2 Scalpels, straight. curved. 2 prs. Forceps, dressing. 4 Probes, whalebone, 10".

# List of Drugs.

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6 sets Woollen Bandages.
2 Graduates, 8 oz.
            minimum.
2 prs. Scales and Weights-43 downwards.
6 Towels.
8 lbs. Bar Soap.
2 Spatulas, large.
2 Tracheotomy Tubes.
2 Catheters, male.
               female.
2 balls Twine.
2 pkts. Blue Powder Paper.
2 quires Tissue Paper.
2 balling Irons.
2 Hypodermic Syringes.
doz. 1 oz. Hard Rubber Syringes.
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The disembarkation of the mules, owing to the position of the mooring buoys and the size of the jetty at Garden Reach, could only be carried out through one leading door instead of two, and occupied 8½ hours. Mooring was not completed till 4 P.M., but the disembarkation was proceeded with till 10-30 P.M. by the light of the large electric cluster lights with which the ship is provided, and about 1,000 mules walked ashore.

Next morning the donkey stallions and the remainder of the mules were all on shore in two hours. In carrying out the disembarkation one mule unfortunately broke its pastern and had to be destroyed.

Thus concluded what is said to have been the longest voyage of

such a large number of animals in one ship.

1 Enema Syringe.

### THE BATTLEFIELDS OF NORTH ITALY.

BY THE HON'BLE LIEUT.-COL. E. NOEL, LATE RIFLE BRIGADE.

### X.—Novi.

(For maps see those published with the January 1909 number.)

After the battle of the TREBBIA, June 19th, 1799, the Armies "of Naples" and "of Italy" were gathered during the month of July in LIGURIA, with some reinforcement from France they amounted to about 43,000, of which not more than two thousand were Cavalry. Both MacDonald and Moreau were recalled; the latter was destined for the army of the Rhine, and the command of the united forces in LIGURIA was confided to JOUBERT. This young General was of the same age as Napoleon, and like him had begun his soldiering in the Artillery. He had served with distinction in the Italian campaigns of 1796-1797.

When we remember the energy displayed by SUVOROV since his assumption of the command of the Russo-Austrian Army in Italy, we are surprized that with the superior forces at his disposal he did not advance across the APPENNINES and crush the shattered French troops then trying to collect together along the sea coast. That he did not do so was owing to the Austrian Government, which now began to show jealousy of the success of the Russian General in Italy, a country which it looked upon as its own special sphere

of action, and its prize in event of victory.

It was mentioned in the last article how this Government withdrew the troops blockading Mantua from Suvorov's control and by doing so deprived him of a hope for reinforcement on the Trebbia. It now took another step and ordered Suvorov to take no turther action against the French army until the fall of Mantua and of all the fortresses in Piedmont. Suvorov was much disgusted, but as a foreigner in command of an Allied Army he felt bound to obey.

The siege of MANTUA was recorded in Article V—(October 1906). The place surrendered to KRAY on July 30th, 1799. ALESSANDRIA had fallen to BELLEGARDE on the 22nd of the same

month.

Meanwhile Joubert decided to take the offensive. His army was reorganized. Perignon commanded the left, consisting of two Divisions—Grouchy and Lemoine—with a Reserve; Saint Cyr the centre and right of three Divisions—Laboissiere, Dombrovski, and Watrin—with a Reserve, besides the Brigade of the Piedmontese. General Colli, who having in 1796 passed from the service of his own country to that of Austria had since joined the French. There was one more Division, under Miollis, which was left behind in Liguria.

Another French army "of the Alps" under CHAMPIONNET, was to co-operate further north from DAUPHINE and SAVOY. In Switzerland were more troops of all three nations, French, Austrians and Russians. The army of the Rhine was not yet formed and MOREAU remained on with the Army of Italy to help JOUBERT with his advice.

The Allied Army numbered over a hundred thousands. The main body, which had been reinforced by 8,000 Russians, was near Alessandria and amounted to over 50,000, composed of three Austrian and three Russian Divisions, while nearly 30,000 more had been set free by the fall of Mantua. Two Austrian Divisions were watching the Alps, and one was sent into Tuscany. The French still held Tortona.

JOUBERT, ignorant of the surrender of MANTUA, began his forward movement on August 9th. The left descended the valley of the BORMIDA on Acqui, the centre that of the Orba on Capriata, while the right marched by the high road leading from the Bocchetta pass on Gavi. After sundry small encounters with the troops of Bellegarde, the French army on the 14th occupied the position of Novi with its right on the Scrivia towards Cassano, its left at Pasturana. It amounted to 38,000, of which only 2,000 were cavalry. Dombrovski was told off to watch Serrayalle where the castle was held by the Austrians.

SUVOROV was reinforced on the 12th by two Divisions, about 20,000, from Mantua under Kray. He was intending to receive the attack of the French in the plains where he would be able to enjoy the advantage of his great superiority in cavalry; but, thinking that they meant to entrench the position of Novi and there await the advance of the army of the Alps, he decided to attack. On the 14th he gathered his right and centre near Pozzolo Formigaro; the left under Melas was further back at Rivalta on the Scrivia, the Reserve at Spinetta. One Russian Division was left to cover the siege of Tortona, and Suvorov had at his disposal two Russian and five Austrian Divisions, a force exceeding 60,000, 10,000 of which were cavalry: the Russians formed the centre, the Austrians the right, the left, and Reserve.

The presence of Kray's troops in his front revealed to the French commander the fall of Mantua; realizing the consequent superiority in numbers of the enemy before him, Joubert determined to retreat. Before, however, that he had done so, he was forestalled by the allied attack on the morning of August 15th.

The position of Novi is a very good one for defence. The land here rises from the plains in a long glacis-like slope, and near Novi occurs a steeper rise forming a ridge with a well defined crest line. This ridge is more pronounced to the east than to the west, where it fades away towards Basaluzzo. In the centre is the town of Novi, surrounded by a wall with towers, forming a large and formidable bastion.

On each flank is a stream issuing through a ravine from the mountains. In rear are more than one transverse hollows and spurs

affording possibly ulterior lines of defence, and, back of all the two small towns of SERRAVALLE and GAVI with their forts covering the

approaches to the APPENNINES.

The former of these was, as already stated, held by an Austrian garrison, making a weak point in the position, and it was by this flank that the enemy succeeded in penetrating. There was at this period no road up the valley of the SCRIVIA; the only way direct to GENOA lay from GAVI over the BOCCHETTA pass, 2,535 feet above

At 5 A.M. the right wing of the Allied Army, consisting of two Divisions under KRAY, advanced in force lst Attack. Right Austrians. against the French left, and tried also to lap round their flank. The flanking movement was defeated by the French Left Reserve, while the two Divisions of GROUCHY and LEMOINE held their position and repulsed the enemy in front. JOUBERT was killed at the outset of the battle, the first in which he had commanded in chief. MOREAU then assumed the command. As the enemy made no sign against the French right, Sr. Cyr who commanded these ordered his right

About 8 A.M. one of the centre Divisions under BAGRATION

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Centre Russians, Right Austrians.

While MELAS was thus turning the French right, their left continued to resist successfully the renewed attack of KRAY, but in the centre the Russians had driven them behind the walls of Novi.

7th Attack. All along the line.

It was now five o'clock: the issue of the battle was already decided. The Russians in the centre, aided by the Austrians on the left, occupied the heights on both sides of Novi. Labois-

SIERE fell back by TASSAROLO, and the French left had to yield up the ridge which they had held with such success throughout the The Russians inclined to the right towards PASTURANA and joined the advancing troops of KRAY. The French left retired in considerable confusion on GAVI. Both Perignon and Grouchy were wounded. Colli's brigade covered the retreat and held on stoutly at Pasturana until 9 o'clock; the last remnant was surrounded and taken prisoners, and Colli himself was severely wounded.

The Allied Army remained near PASTURANA and Novi. The French rallied during the night in the neighbourhood of GAVI. French lost 1,500 killed, 5,000 wounded, 3,000 prisoners and 37 guns: the Allies 1,800 killed, 5,200 wounded, 1,200 prisoners and 3 guns. The killed and wounded amounted to about one-sixth of the total engaged. The Reserve of the Allies did not come into action.

Suvorov did not display the same skill on this occasion as he did on the TREBBIA. The Division left to face the weak French garrison in Tortona (10,000 to watch 1,200) would have been much better employed on the field of battle: the right and centre were pushed forward, and these even not at the same time, long before • the left was within reach; several frontal attacks were directed against a strong position without any serious effort against either flank. The eventual success was due to MELAS' action against the French right: the topography of the battlefield, the possession by the Allies of Serravalle, and the direction of the French line of retreat, all pointed out this flank as the most favourable point for attack. If MELAS had pushed on towards GAVI, instead of turning round on Novi, the defeat of the French would have been much more complete. The only apparent reason for Suvorov to hurry on his attack is the wish not to afford his enemy time to entrench the position.

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On a death occurring it is at once entered in the ships log to arrival at the port of disembarkation, an extract from the log sub-be obtained, giving the following information:—

1. Description, Number Sex, Age.

Date of death Longitude and Latitude in whithe animal died.

This extract should be signed by the Captain.

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The following is a list of gear necessary:

# List of Goar and Describedants

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Shovels		•••	••	30
Wonden Hons	•		•	
Steel Scrapers		• • •	• • •	- 60 Unnersace - 50
Bass Briefins	•••	- •	•	
Iron Buckets	•	•	•	70 
Mule Strings		• •		70
Corry Combo				20
Dundy Brushes	•••	•	••	30
Man	•••	•••		7()
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White wash Bru	1-11-	•		12
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## List of Drugs.

10 gallons Linseed oil. 8 oz. Iodoform. 400 lbs. Epsom Salts. Citrate of Potassium. 2 Tincture of Opium. .. Asafætida. 6 gals. Spirit of Nitrate Ether. 1 lb. Sulphate of Copper (crystal). 4 oz. Belladonna (fluid extract). 5 lbs. Camphor. 10 Linseed Meal. 3 (tins) Soft Soap (green soap). Boracic Acid. 5 Potassium Permanganate. 5 Ginger (ground). Aloes-Baradoes. 200 grs. Strychnine in 1 gr. tablets. 5 lbs. Nux Vomica (fluid extract). 2 **Digitalis** ( " 10 Croton. Chloride of Ammonia. 2 Alum, powdered. 10 Vaseline. Bichloride of Mercury (7 gr. tablets). gals. Treacle. Turpentine. 4 lbs. Liquer Ammonia. ... Stockholm Tar. 4 4 qts. Acetic Acid. 1 lb. Tincture of Iodine. 50 yds. Bandages, cloth. 100 lbs. Carbolised Tow. 2 doz. Sponges, small. Corks (assorted sizes). Phials, narrow mouth, 8 oz. wide mouth, Galley Pots. Bottles holding 2 quarts. 2 Pestles and Mortar, wedgewood, medium. 1 doz. Clinical Thermometers. 4 Pewter Syringes, 2 oz. 1 doz. Veterinary Needles. Silk Sutures. Scalpels, straight. 2 curved. 2 prs. Forceps, dressing. 4 Probes, whalebone, 10".

## List of Denga.

6 sets Woollen Bandages

2 Graduates, 8 oz.

2 . 4 oz

2 .. minimum.

2 prs. Scales and Weights-43 downwards

6 Towels.

8 Ho. Bar Soap

2 Spatulas, large.

2 Tracheotomy Tubes.

2 Catheters, male

2 .. temale

2 bads Twine.

2 pkts. Blue Powder Paper.

2 quires. Tissue Paper.

2 balling Irons

2 Hypothermic Syringes.

A dez 1 oz Hard Rubber Syringes

1 Enema Syringe

Disembarkation of the mules owing to the pestin of the mosting brooks and the size of the petical toriented for the following brooks and the size of the petical one leading door instead of two, and occupied \$3 hours. Marriages not completed till 4 PM, but the disembarkation was processed with 10 50 PM, by the light of the large electric cluster lights with which the ship is provided, and about 1 000 mules walked ashers.

Next morning the donkey starrons and the remainder too mules were all on shore in two hours. In carrying out the discharkation one mule unfortunately broke its pastern and had to destroyed.

Thus concluded what is said to have been the longest a year such a large number of anima's in one shop.

### THE BATTLEFIELDS OF NORTH ITALY.

BY THE HON'BLE LIEUT.-COL. E. NOEL, LATE RIFLE BRIGADE.

#### X.—Novi.

(For maps see those published with the January 1909 number.)

After the battle of the TREBBIA, June 19th, 1799, the Armies "of NAPLES" and "of ITALY" were gathered during the month of July in LIGURIA, with some reinforcement from France they amounted to about 43,000, of which not more than two thousand were Cavalry. Both MACDONALD and MOREAU were recalled; the latter was destined for the army of the Rhine, and the command of the united forces in LIGURIA was confided to JOUBERT. This young General was of the same age as Napoleon, and like him had begun his soldiering in the Artillery. He had served with distinction in the Italian campaigns of 1796-1797.

When we remember the energy displayed by SUVOROV since his assumption of the command of the Russo-Austrian Army in Italy, we are surprized that with the superior forces at his disposal he did not advance across the APPENNINES and crush the shattered French troops then trying to collect together along the sea coast. That he did not do so was owing to the Austrian Government, which now began to show jealousy of the success of the Russian General in Italy, a country which it looked upon as its own special sphere of action, and its prize in event of victory.

It was mentioned in the last article how this Government withdrew the troops blockading Mantua from Suvorov's control and by doing so deprived him of a hope for reinforcement on the Trebbia. It now took another step and ordered Suvorov to take no further action against the French army until the fall of Mantua and of all the fortresses in Piedmont. Suvorov was much disgusted, but as a foreigner in command of an Allied Army he felt bound to obey.

The siege of MANTUA was recorded in Article V—(October 1906). The place surrendered to KRAY on July 30th, 1799. ALESSANDRIA had fallen to BELLEGARDE on the 22nd of the same month.

Meanwhile Joubert decided to take the offensive. His army was reorganized. Perignon commanded the left, consisting of two Divisions—Grouchy and Lemoine—with a Reserve; Saint Cyr the centre and right of three Divisions—Laboissiere, Dombrovski, and Watrin—with a Reserve, besides the Brigade of the Piedmontese. General Colli, who having in 1796 passed from the service of his own country to that of Austria had since joined the French. There was one more Division, under Miollis, which was left behind in Liguria.

Another French army "of the Alps" under Championer was to co-operate further north from DAUPHINE and Savoy. In Savzerland were more troops of all three nations, French, Austrians 22; Russians. The army of the Rhine was not yet formed and Monea remained on with the Army of Italy to help Jouliert with hes a jeas-

The Adicd Army numbered over a hundred thousands. It main body, which had been reinforced by 8,000 Russians was rear ALESSANDRIA and amounted to over 50,000, composed of the Austrian and three Russian Divisions, while nearly 30,000 more had been set free by the ful of MANTUA. Two Austrian Divisions was watching the Alps, and one was sent into Tuscany. The Free still held Tortona.

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The Russian Army shortly afterwards went into winter quarter in Bayaria, and took no further part in the war. The Emperor Passoon after this withdrew from the coalition.

Thus ended this remarkable expedition, which, had it not been for the jealousy of their Allies, would have brought a Russian Armeto the shores of the Western Mediterranean, and perhaps even in France by way of Nick.

### REFORM IN THE SUPPLY SERVICES OF THE INDIAN ARMY.

By Major H. A. Young, R.A.

### Indian Ordnance Department.

The popular conception of an Army might be expressed in the one word 'Soldiers'; but we, who are in Introduction. the Army, know that in addition to the fighting units there are certain organizations that are concerned in the feeding, clothing and housing of those units and in their payment and equipment. In this country quite a number of 'departments' are involved in this work of 'supply', using the word in the broadest sense, most of them belonging to the Army; but some being entirely In the Army we have the Supply and Transport under civil control. Corps and the following departments: -Ordnance, Clothing, Military Works, Remount, Medical Store and Military Accounts. The civil departments are:—Stationery, Jail. Mathematical, Instrument and also the Contractors for Government Printing. Not even the Military departments are concerned only with the supply of the necessaries of existence to the fighting units. The Military Accounts department, for example, not only supplies pay and money generally, but it keeps and compiles the Army accounts and checks the transactions. both store and cash, of all other services in the minutest detail. The Military Works Department not only keeps barracks in repair and supplies certain stores such as furniture, but it is also concerned with fortifications and military roads. In fact, the business of supply is split up, often in quite an arbitrary manner, among a number of distinct departments each with its own ideas and its own methods and each with other duties to perform at the same time. More than one-third of the money allotted to the Army is spent on these supply departments and on the stores they provide, not taking into account the money given for actual building and special works. This should help us to realize how important it is that the supply organization shall be based on sound, economical and business principles. Are we certain that the existing arrangements are based on these principles and that this vast business is both economically and efficiently conducted? This question, unfortunately, has never received the attention it deserves, if we may judge by the contents of Military Journals and by the catalogues of Military This neglect is due, largely, to two reasons, one being that its consideration leads to criticism while criticism is not exactly encouraged and is not always safe; the other is the nature of the subject itself which appears dry and uninteresting to those who

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About 8 A.M. one of the centre Divisions under BAGRATION

### 2nd Attack. Centre Rus-

moved forward against Novi and the ground immediately west of it, defended by LABOIS-SIERE and COLLI, who withheld their fire

until the enemy were within very short range. Staggered by this fire the Russians endeavoured to get round to the east of the town, but were here opportunely met by WATRIN whose three demibrigades came up in succession on their left flank. The Russians were driven back towards Pozzolo Formigaro.

The other Russian Division—Derfelden—now came into

3rd Attack. Right and centre Austrians and Russians. action, and directed its chief attack just west of Novi. This like that of BAGRATION was checked in front by LABOISSIERE and

taken in flank by WATRIN; the Russians were again driven back with great loss. At the same time KRAY made a second attack on the French left, combined as before with an effort to turn their flank. Both his Divisions were again repulsed.

Towards noon Suvorov once more launched his Russians

4th Attack Centre Russians. against the French centre; these after a fierce struggle were again driven back by the French, who had thus held their position

successfully for eight hours. The great heat of the day and the exhaustion of the attackers now brought about a pause in the battle.

About 3 P.M. SUVOROV renewed his attacks against the French

5th Attack. Right and Centre Austrians and Russians. left and centre, but again failed to dislodge the enemy. He would not, however, consider himself defeated, for his left and Reserve had not yet been engaged. The former under

MELAS was now coming on the field along the valley of the SCRIVIA.

MELAS had four brigades. He sent one—the left—up to right bank of the Serivia towards Seria valle, one—the right—in according with orders from Sevorov against to position east of Novi, while the two central brigades circled roops the French right and took Watkin's Division in flank and roop This Division had to fall back on the Reserve, and with it took of a new position behind one of the transverse streams astrock to read to Gavi. Meanwhile Melas' left brigade drove Domnkovski

back from SFRRAVALLE also towards GAVI, and itself penetrales to ARQUATA.

While Menas was thus turning the French right their lets continued to resist successfully the renewest attack of Kray, but in the centre to Russians had driven them, behind the way.

of Novi.

It was now five oclock; the issue of the battle was already decided. The Russians in the centre at 1 2 the line. by the Austrons on the left occupied the

heights on both sides of Novi. Lagors SIERR fell back by Tassarono, and the French left had to you for the ridge which they had held with such success throughout to day. The Russians inclined to the right towards Pasivkana at joined the advancing troops of Kray. The French left retired a considerable confusion on Gavi. Both Periodox and Greener were wounded. Cornes brigged covered the retreat and held as stoutly at Pasivkana until 9 oclock, the last remnant was a remained and taken prisoners and Collie limself was several wounded.

The Aliced Army remained near Pastickana and Nevi. Thereigh radiced during the right in the neighbourh self of Gavi. The Iron host 1,000 kined, 5,000 wounded, 5,000 prisoners and 57 gais the Arms 1,800 kined, 5,200 wounded, 1,200 prisoners and 3 gais the kined and wounded imported to about one sixth of the 4-34 engaged. The Reserve of the Arms did not come into act, in

Stronger did not display the same skill on this owner, it as a did on the Terrora. The Dissistent left to fast the weak Fronce garrison in Lourona 100000 to watch 1,2000 would have been in the better empty and on the nod of batter the right and centre were pashed forward and the season not at the same time length to the left was within routh several front a attacks who could against a strong position without any serious effort against out than I for eventual size so was due to Millar action against to bring the treatment of the level of the proposessor of the Albert 1881, a value of the difference in of the Fronth line of the Albert 1881, a value of the first of the position of the as the nest two firsts of the could be a transfer of the Fronth would have been in and a Novi the other of the Fronth would have been in the country to the other of the Fronth would have been in

on his attack is the wish not to afford his enemy time to entrench the position.

After the battle the French Army withdrew to LIGURIA, still holding the crest of the APPENNINES. MOREAU soon after left the

"Army of Italy" to take up his new command on the RHINE.

SUVOROV, faithful to his instructions from the Austrian Government, did not follow up the French Army, but sought rather to secure the conquests already made, pending the fall of the remaining fortresses. He moved himself with the main body to ASTI, on the road to TURIN, where he would be in a situation either to meet the "Army of the Alps"—the heads of whose columns began towards the end of August to show themselves east of the mountains—or, by a movement across the APPENNINES, to cut the communications of the "Army of Italy" with France.

TORTONA surrendered on September 11th, the garrison, 1,200 men, being allowed to return to France, and about the same time

the Russian Army received orders to leave Italy.

It has been already noticed that the Austrian Government was dissatisfied with the presence of the Russians in Italy. By this time another Russian Army under Korsakov had arrived in Switzerland. The Austrian Government plausibly suggested that the troops of each nation had better work together, and further that the Russian soldiers would be more in their element in the colder regions, north of the Alps than in the sunny plains of Italy. It was agreed between the Governments that the Army of Suvorov should cross the Alps and join that of Korsakov.

The Austrians were better acquainted than the Russians with these regions and their staff made the arrangements for the march. The arrangement made was for the artillery and baggage to move by the Splugen, the troops with only mountain guns by the St. Gothard. This latter pass would seem to have been chosen in order to bring the Russian Corps on the flank of the French Army in Switzerland. It is disputed whether this choice was due to Suvorov or to the Austrian Staff. The notorious Weyrother, who had figured on the Mincio in 1796, accompanied the column as staff officer.

SUVOROV waited in Italy until the surrender of TORTONA, and then set out on his adventurous march. He crossed the summit of the pass, defended by three French Battalions, on September 23rd, and on the next day occurred the famous fight at the "Devil's Bridge": this is above the present tunnel and does not therefore come within view of the traveller by rail. On arrival at the lake of LUCERNE, where the road then stopped, SUVOROV found all the boats removed, so that he had to strike east across the mountains, pursued by the French.

Meanwhile Massena had defeated the Russo-Austrians in the battle of Zurich—September 25th—and Suvorov found himself hemmed in by the enemy on three sides with all the exits from the mountains blocked, so, turning south, and having to abandon his

guns and his sick and wounded, he made his way over the PANIX pass nearly 8,000 feet above sea-level, and reached the valley of the Rhine, whither he could have come with ease and safety by the SPLUGEN.

The Russian Army shortly afterwards went into winter quarters in Bavaria, and took no further part in the war. The Emperor Paul soon after this withdrew from the coalition.

Thus ended this remarkable expedition, which, had it not been for the jealousy of their Allies, would have brought a Russian Army to the shores of the Western Mediterranean, and perhaps even into France by way of NICE.

## REFORM IN THE SUPPLY SERVICES OF THE INDIAN ARMY.

By Major H. A. Young, R.A.

### Indian Ordnance Department.

The popular conception of an Army might be expressed in the one word 'Soldiers'; but we, who are in Introduction. the Army, know that in addition to the fighting units there are certain organizations that are concerned in the feeding, clothing and housing of those units and in their payment and equipment. In this country quite a number of 'departments' are involved in this work of 'supply', using the word in the broadest sense, most of them belonging to the Army; but some being entirely under civil control. In the Army we have the Supply and Transport Corps and the following departments: -Ordnance, Clothing, Military Works, Remount, Medical Store and Military Accounts. The civil departments are: -Stationery, Jail. Mathematical, Instrument and also the Contractors for Government Printing. Not even the Military departments are concerned only with the supply of the necessaries of existence to the fighting units. The Military Accounts department, for example, not only supplies pay and money generally, but it keeps and compiles the Army accounts and checks the transactions, both store and cash, of all other services in the minutest detail. The Military Works Department not only keeps barracks in repair and supplies certain stores such as furniture, but it is also concerned with fortifications and military roads. In fact, the business of supply is split up, often in quite an arbitrary manner, among a number of distinct departments each with its own ideas and its own methods and each with other duties to perform at the same time. More than one-third of the money allotted to the Army is spent on these supply departments and on the stores they provide, not taking into account the money given for actual building and special works. This should help us to realize how important it is that the supply organization shall be based on sound, economical and business principles. Are we certain that the existing arrangements are based on these principles and that this vast business is both economically and efficiently conducted? This question, unfortunately, has never received the attention it deserves, if we may judge by the contents of Military Journals and by the catalogues of Military This neglect is due, largely, to two reasons, one being that its consideration leads to criticism while criticism is not exactly encouraged and is not always safe; the other is the nature of the subject itself which appears dry and uninteresting to those who

have had only the ordinary training of a British Officer. There is moreover an intangible something in the air of this country which seems to offer innumerable barriers to reform. Who, among the junior ranks especially, that has put forward proposals for some reform, does not remember the endless channels through which the matter slowly trickles, the numerous offices and departments found to be concerned; the enormous time taken for consideration and the usual final result of rejection on account of some ancient precedent or nasty regulation. One department, or even two, may be earnestly desirous of progress; but, sooner or later, reform is wrecked by one wedded to known but obsolete ideas or methods. This 'intangible something' is often given the name of 'babuism' by those who suffer from it. One thing is certainly clear, in considering this subject, we must get rid of all reverence for mere precedent or custom, we must ignore those dusty files that repose in every office and we must refuse to accept blindly the idea that only an Artillery Officer can make or issue equipment and only an Indian Army Officer be trusted to deal with accounts. We must treat the subject from an entirely new stand-point which is that supply is not primarily a question of 'Soldiering' at all, it is a business first and foremost. Supply, to be economically and efficiently done, must be managed by men who are sound business men first and military officers second. If the work be examined closely it will be seen that an overwhelming proportion is the exact counterpart of that done every day in great commercial undertakings and only occasionally will matters be found that must be dealt with from a purely military standpoint. work of supply consists in providing the Army with everything that is necessary for its maintenance in a thoroughly efficient state in peace and in war; to carry out this work we must purchase, manufacture, store and issue. There are, in reality, only two ways in which our work differs from that of ordinary commercial business, one is the absence of profit, the other the necessity for providing for an abnormal state of affairs known as war. In the first case we must provide some other touchstone by which we can judge of the economy of our work, and as regards the second, we must so plan our organization that war will cause as little dislocation as possible. The supply of a division in the field will not be carried out less efficiently because its supply officers have been performing the work in peace time in a business-like manner. The Great Duke made many a bitter complaint of the inexperience and want of capacity of his supply officers and in one of his Peninsular despatches he says :- "I am perfectly aware of the quantities of papers and vouchers required by the Auditors of Accounts. This difficulty comes in my way at every step, and I declare it to be my opinion that no one department of the service is formed for an extended system of operations abroad. But unfortunately I must adhere to rules and regulations framed by my superiors and a great part of my time is spent in endeavours to discover expedients for carrying on the service in a manner that is consistent with the rules and regulations." That was written in

1810, yet, ninety years later and in spite of much progress, confusion and failure were still apparent and the state suffered an enormous loss of money through the lack of business training in the great

work of supply.

I ought now to show in what respect the present arrangements fall short of the idea of efficiency and economy, but I must confess that I am not prepared to do this as it might and should be done; it would involve far too much criticism of the existing organizations, their methods and their work. That all departments strive to carry out their duties honestly and well, we may certainly believe, but the thoughtful officer will look with some doubt on the results. The work is done; but certainly not so economically and probably not so efficiently as the State has a right to expect. It is governed by minute regulations framed to meet cases and not based on broad principles. It is hampered by a mass of paper work, forms and certificates without number rendered necessary in the main by an antiquated and complicated system of accounts which involves too often the maximum of labour with the minimum of useful results. It is performed by a number of independent departments managed on different lines with a certain amount of interference and over-lapping. There is an absolute lack of business-training resulting in unbusiness-like methods. Modern equipment for the handling of stores and for the prompt despatch of business is wanting. There is a great waste of power due chiefly to a want of concentration in administration and the work presses much more hardly on some than on others. Finally, officers have no true financial responsibility for the work they do and while 'economy' is practically an unknown word in the plains, it is often only a synonym for 'cheeseparing' in the hills.

Destructive criticism, however, is fatally easy and it is preferable to proceed at once to the foundation General Principles. of the conditions which an ideal organization for the supply of everything necessary to the maintenance of an Army should fulfil:-

1. It must be governed by regulations based on broad prin-

ciples.

- 2. Its administration should be concentrated but its executive work and responsibility should be decentralized to the utmost.
- 3. It should provide a sound and thorough training for its officers and for their subordinates.
- 4. It must grant to all officers both regimental and departmental who are in charge of the property of the State, the fullest financial responsibility for their work.

5. It should entail the minimum of clerical work on the part of the regimental officer.

6. Its system of accounts should be interlocking and selfchecking, all transactions being verified on the spot and at each stage.

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- 7. Its accounts should be so compiled as to afford the utmost assistance to executive officers responsible for expenditure and also to those who are entrusted with the administration of the Army. These compiled accounts should be capable of true audit by in independent audit department.
- 8. Its peace organization must be readily convertible into that necessary for war.

9. Its motto should be 'Efficiency and Economy.'

These conditions or principles can be discussed best under the

following general heads:-

Administration, Regulations, Accounts and Training, with some further amplification when sketching the details of the proposed new organization.

The administration of supply matters, as I have already said, is split up among a number of different de-Administration. partments, some being under the Commanderin-Chief, some under the Supply Member, while others are under civil control. But the administration of even these comparatively small departments is not concentrated. In the Ordnance Department, for example, the work is done not from Simla alone, but also from Poona, Rawal-Pindi and Naini Tal, while most of its accounts are dealt with at Calcutta. The Military Accounts Department has also many centres of administration besides Simla. Now whatever advantages this system may have, it has many obvious disadvantages in the shape of duplication of work, delay in the despatch of business and expense in the upkeep of highly paid officials and large offices. However necessary the arrangement may have been in the days when communication was difficult, there seems no justification for it now. The combatant side of the Army has led the way and it is quite time that supply administration was concentrated also; at the same time the powers and the responsibility of the executive officer should be increased and the division become the unit for supply control as The supply of it now is for military training and administration. food, equipment, pay and all other necessaries is really part of one business and can be governed by one set of rules and be managed by one department. There are, probably, only two ways of managing a vast business like that of Army Supply. It can be done by regulations of the minutest detail, by laying down hard-and-fast rules for every case as it arises, by a rigid system that strives to force everything and everybody into a set of standard moulds and by administrative interference in the pettiest detail of executive work. This used to be the method in the combatant branch, but more enlightened ideas prevail there now and the tendency is to concentrate administration and to decentralise executive work, and, above all, to cultivate initiative and responsibility in the individual. This tendency does not appear to have affected the supply services to any great extent and they still suffer from over-regulation, cast iron methods and lack of confidence in their executive officers. Now minute regulations

may be drawn up by clever men, hard-and-fast rules be the result of great experience, standard moulds of good pattern and interference in executive work be prompted by high motives, but the results must be bad, not only in the present but in the future. Not only is all thought and initiative crushed, not only is blind obedience to the printed regulation put far above an intelligent seeking for better or more economical methods; but the future generations of administrative officers are being trained to a narrow outlook and must inevitably become mere followers of the methods of to-day. world does not stand still and efficiency in any part of military work can only be obtained by progress. The only economical and really efficient way of organizing our supply work is to adopt sound business principles for its management, to base on these principles broad rules for the guidance of executive officers, to concentrate administrative work in one office, to devolve financial responsibility, to encourage to the utmost individual initiative and a spirit of emulation and to judge all by results. We require from every man the best work of which he is capable, and it is certain that a rigid system tends to draw the better men down to the level of the least efficient. It is an unfortunate defect in some of the cleverest men to desire everything of the one pattern, and this is one reason why there are so many successful business men without any exceptional abilities othe ; than that of obtaining the best work from their subordinates. tration should moreover be sympathetic and that apt dictum of Lord Curzon should never be forgotten: "India may be administered from the hills but it is governed from the plains." The burden of the work is borne by the executive officers amidst the many discomforts of the plains and it is fatally easy for the administration to add to these discomforts by harsh and unsympathetic treatment.

A vast business like that of Army Supply must be governed by certain rules and regulations. At present it Regulations. would seem that these rules have never been based on definite principles, but that, on the contrary, they have come from the custom of antiquity, or, by the operation of an unfortunate habit of the English people, have been evolved from time to time to deal with cases as they arose, without forethought or grasp of principles. Much of our legislation especially in industrial and commercial matters suffers from this defect. If supply is to be run on business lines and therefore economically, one of the first essentials is a thorough revision of regulations of all kinds, they must be brought into line with modern and common-sense requirements. No respect for precedent, age or mere custom should be allowed to interfere with a root and branch reform of regulations, tables and Broad principles must take the place of the petty rulings which now form the bulk of our Army books of regulations.

It is only possible now to give one or two examples toshow the lines on which this revision should be undertaken.

If a business man is shown our regulations regarding, and our scales of, pay, he is absolutely astounded at the extraordinary compli-

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cations we have managed to introduce into so simple a matter. A good deal of it dates from 'John Company's time' and might well be left now to antiquarians. Pay should be simplified by adopting the broad principle. A consolidated daily rate for each rank or grade with as few excrescences in the shape of allowances or extra pay as possible. Leave pay should be a fixed proportion of the daily rate. Let us examine the case of a Store Sergeant in the Ordnance Department. This Non-Commissioned Officer is appointed for certain definite duties and might, one would imagine, be given a certain fixed daily or monthly rate of pay. No, we solemnly calculate each month his earnings under seven distinct heads:—(i) pay of rank, (ii) extra pay, (iii) service pay, (iv) ration money, (v) messing allowance, (vi) family allowance, not fixed but depending first on his family and second on the total of certain items of his pay, (vii) staff pay, which may be full or half according to circumstances. Besides these seven monthly items, he is also during the year entitled to an allowance in lieu of clothing and a compensation in lieu of soap, brushes and straw. Is this not awful at our present stage of civilization? It means in the aggregate an enormons amount of clerical work both in the departmental and the accounts offices, work which serves no useful purpose whatsoever. Is it a task beyond the wit of man to sweep this away and to fix a consolidated rate in lieu? Our equipment tables are most complicated, first, because the stores are supplied by so many different departments; second, because elaborate and rigid scales of allowances are laid down for the upkeep of each unit, and third, because we will not fix a definite number of each article to be maintained but enter '1 per' something else. The equipment table of a unit should show the number of each article that the unit must maintain as its equipment. Scales of allowances should be abolished and in lieu a credit granted against which the unit may draw such stores as it finds it needs for its maintenance in a serviceable condition. The equipment table should be under constant revision, be reprinted every year and be used as an equipment ledger.

This matter of the simplification of regulations can be briefly stated thus: if financial responsibility is refused to officers who command units or who are in any way in charge of the property of the State, expenditure can only be controlled in detail and then only imperfectly and at high cost and the regulations must provide a ruling for each separate case. If, on the other hand, financial responsibility is devolved and officers made to understand that an account will be kept of all expenditure incurred by them, that the compiled accounts afford means of comparison between similar units and charges and that by the economy displayed as well as by the efficiency attained they will be judged, then and then only will expenditure be properly and economically controlled, and then the regulations can be simplified by restricting them to broad principles and clear general rules. This branch of the subject was dealt with in a paper which appeared in the Journal of the Royal United Service Institution of October,

1906, in which I endeavoured to show how essential it was to true economy that every officer should know the cost of everything he used and be made to realize that economy in the upkeep of a unit would not pass unnoticed.

The subject of accounts is too large a one to be dealt with fully in this paper, but it is so intimately Accounts. connected with any discussion of reform in supply work that some consideration of it is essential. Our accounts, at present, are an end in themselves and when they have been checked in the minutest detail by examiners often ignorant of the very articles the transactions deal in, they are usually held to have served their purpose. We check voucher by voucher, word by word, we see that the correct signature and certificates are attached, but rarely do we compile accounts so as to assist those responsible for expenditure. Moreover, the waste of time and money involved in the satisfying of a distant examiner is lamentable and the cost is out of all proportion to the results obtained. A well devised system of accounts is an essential in every large modern business; but however clearly this fact is recognized by the commercial man, he recognizes still more clearly that accounts cost money and therefore that the fullest possible return must be obtained from them. It is not sufficient for him to know that each transaction is properly recorded and vouchered for: this is comparatively unimportant and can be checked by the subordinate staff. What he requires is systematic and careful grouping of expenditure which will show him where his money goes and the cost of every part of his He insists on being furnished with data which will aid him in the management of his business. He wants to compare branch with branch, month with month, so that he can put his finger immediately on unnecessary expenditure or on some method that can be replaced by a more economical or efficient one.

Our system of accounts requires thorough reform if it is ever to do what a modern and well desired system does for the merchant and the manufacturer. Cumbrous and complicated enough is the system as authorized; but to fully realize the enormous amount of time and paper involved, it is necessary to leave the officer's room and to investigate in the offices of the subordinates and clerks, to insist on seeing every form and every record, in fact every piece of writing whether in English or in the vernacular. Many an unauthorized form and record will be found which are used to fill up the gaps, to provide the useful information ignored in the authorized procedure, or to defend the possessors against possible demands from their superiors or from the examiners. Much of the work in connection with accounts is of no possible value to those entrusted by the State with the direct control of expenditure. The compilation of military expenditure under the present Budget heads may have its advantages from a purely accounts point of view, but it has little practical value to the executive or administrative officer. Economy can only be obtained in the units of executive control and these units should furnish the headings for any compilation which is to be of real assistance to those responsible at the very outset for expenditure. Economy can never be obtained in or by any accounts effice, it must come from the direct efforts of executive, regimental and departmental officers, guided and controlled by their administrative superiors. Accounts are, at present, too often a hindrance, rather

than an aid to good work.

Surely the Military Accounts Department has too many duties to perform; it keeps the Military purse and issues all monies required for pay and for purchases; it maintains both cash and store accounts; it compiles expenditure and it checks to the utmost detail every transaction undertaken by corps and departments. To my commercial mind this is hopelessly wrong, it gives far too much power to the department, it removes responsibility from those who should bear it, it prevents the utilization of much valuable information and it entails an amount of clerical work out of all proportion to the useful results attained. The Officers of the department must be so occupied with the enormous mass of petty details that they can have little time for the broader work of true accountancy.

Pay and money generally should be issued by the supply department in a similar way to other necessaries. The check of details of transactions should be carried out on the spot and at each stage by the supply department. A true and comprehensive audit of the accounts as a whole should be undertaken by an audit branch of the Finance Department. The checking of the details of transactions is not the duty of an audit department. A very high authority on commercial accounting, Professor Dicksee, has stated that "the balance of advantage lies in throwing as much responsibility as possible upon the staff audit because those who are actually in touch with the transactions engaged upon are better capable of verifying the detailed record than those whose only knowledge of the transactions is such as may be gained from the records themselves." In other words, we should not attempt to check the details of transactions in a distant examiner's office when the very nature of the article dealt with is unknown to the auditors and when the transactions themselves were completed months before. As regards the principles on which the regulations concerning check and audit should be based and the necessary safeguards against dishonesty constituted, I would observe that the age is passed when British Ministers could be impeached for misuse of public funds and when British Colonels derived large profits from the command of a regiment. Moreover in legislating against fraud and dishonesty it is obviously essential that henest enterprise and industry should not be hampered in any way. Yet how frequently in this court y we come upon rules and regulations which, at the least, waste the time of the honest man while placing little real obstacle in the way of the careless or dishonest man. Check and audit like many other things owe their value to the results obtained and it is easy indeed, under a short-sighted policy, to undertake them on such a scale

and to such a minuteness that the cost is out of all proportion to the results. The economist's law of Diminishing Return might easily be applied to this case and stated thus—the return from andit check and countercheck very rapidly diminishes as the cost increases.

In considering the subject of reform in the supply services of the Indian Army it would almost be possible to omit everything save the necessity for a proper training for the personnel, for I have little doubt that, given the training, all the unbusiness-like methods, regulations and accounts would be swept away by the unanimous action of the supply officers. This question of training must be divided into three parts, as it concerns three classes : officers, subordinates and clerks.

Do we now make any attempt to fit the officers of our departments for their business? The officer starts with a fair military education which has done little more than hint at the existence of our supply organizations and after four or five years of regimental life, he, on his own initiative and for his own personal reasons, is launched on a depart-For a year he is usually on probation and during mental career. that period he may be supposed to be under training, but it is little more than a name. He is turned loose and left to pick up the work as best he can. There are no teachers, unless the officers, who are already fully employed in carrying on the ordinary work of the department can be called teachers. The officer of a department is neither specially selected for business abilities nor has he had any business education and he is not even trained, when he joins, in the ordinary routine of his own department. We are quite unique The fighting branch have more regard for their efficiency, the fighting officer commences with a fair military education and practically continues under instruction for many years, his fitness is tested at every step and numerous institutions are provided for his technical and higher education. The commercial man starts with a business education, works his way up usually from the very bottom, finds colleges, night schools and technical institutions to help him on his way, and, above all, soon realizes that without thorough knowledge of his job, success in life is impossible. It is only our unfortunate supply man who is not supposed to require any education for his particular branch of life. The wonderful thing is, not that the business is done uneconomically but that it is done Should any one care to investigate this matter further, I would suggest his comparing the training of a Military Accounts Officer with that of a Chartered Accountant.

It is probably a debatable question whether a proportion of our Supply Officers should not be entered direct from private life though a military education and even a short military life have a distinct value to those who are to spend their service in ministering to military wants. Still there is no disguising the fact that a military education is but a meagre equipment for what is mainly a

business career. In any case, a school of instruction, well equipped and properly staffed with experts in all branches of supply business, is an absolute necessity for the training of young officers and for the higher education of the seniors. It is also most desirable that officers should be sent home from time to time to acquire new ideas and to learn how modern business is conducted and also to observe how the Home Army deals with its problems of supply. It will be necessary, however, to remember that home methods are not necessarily the best or the most suitable to the requirements of this country.

The military subordinates who form the great majority of the subordinate officials of our departments, (li) Subordinates. come from the very best class in the Army, the senior non-commissioned officers and they usually join as smart, intelligent and resourceful men. They receive practically no training, being usually placed at once with some other subordinate in need of assistance and left to their own devices. Many turn out well; but, unfortunately, a large number merely learn blind obedience to the printed regulation and how just to past muster and in a few years they become fat and listless with but little trace remaining of their former good qualities Some it is but too evident discover that emoluments need not be restricted to pay. Business and economy are words without meaning to most of our subordinates and practically nothing is done to develope their intelligence or any sense of responsibility. If good work is required from our subordinates, we must lay a sound foundation by giving them a proper training and everything I have said regarding the necessity for a school of instruction for officers applies with equal force to one for subordinates.

There is an idea abroad that whatever may be the defects of the educational system of this country. at (iii) Clerks. least it does fit its men for clerical work in Government offices. This may be so as regards civil offices; but it is certainly not the case with the class of men who come to the ordinary departmental office: their knowledge of English is imperfect, of business methods and requirements nil, and even of simple correspor dence work such as letter drafting, docket and precis, hardly more than the veriest rudiments. They represent very ignorant material at the best and the majority remain little better to the end too, like the rest of our personnel, are turned loose in an office and have to pick up their work in any way they can. Even if they happen to be placed under a really good clerk it seldom happens that he has either the time or the teacher's art necessary to train the young men as they should be trained. Moreover, our offices are too often hopelessly antiquated and quite unfit in their organization and equipment for the accurate and prompt despatch of business. Can this be wondered at when it is remembered that scarcely a single Officer has ever seen a real business office, so naturally he knows nothing about its organization and equipment

and unfortunately he is never taught anything about it either. Many of our offices are located in prehistoric dwelling-houses with the clerks in badly lighted bedrooms, the typists in dressing rooms and the records nicely hidden in rat-haunted bathrooms. Even in administrative offices one may find the records in cellars, a half hour's walk away for the ordinary peon. The office equipment is usually beneath contempt. It is true we have discarded sand boxes and we have obtained a scanty supply of rubber stamps and typewriting machines; but most modern aids to office work are conspi-Calculators, dating and numbering cuous by their absence. machines, loose leaf ledgers and books, card indices, filing cabinets, duplicating apparatus, copying books, nearly all are absent. Even quite ordinary convenience are frequently lacking such as ledger desks, proper bookshelves and record presses, clean and well-contrived writing tables, stationery racks, and the general appearance of the ordinary office is dirty, untidy and quite unworthy of a Government place of business. The methods are usually on a level with the equipment and are what one would expect from untrained and illeducated men. If good office work is wanted, it must be prepared for by training and it must be paid for. The fact seems to have been overlooked that while the prosperity of the country has increased enormously, greatly to the benefit of many, it has proved a positive disadvantage to the clerical class on the whole as it has brought no increase of wealth to them but has raised the prices of all their necessities. It is quite a question whether some training should not be given to the young clerks before they are posted to supply offices.

Some explanation of the proposed organization together with a sketch of its constitution is necessary; but detail will be avoided as much as possible.

I propose that the business of supplying the Army with pay, food, animals, clothing and equipment of all kinds shall be concentrated in one department to be administered by a chief of the Supply Staff directly responsible to the Commander-in-Chief. He will be assisted by five Directors who will have charge of the following branches:—(a) direct supply to troops, (b) store depôts, (c) manufacturing establishments, (d) contracts and home indents, (e) accounts. These Directors will not be independent but will represent the managing Board of Directors of a large mercantile firm, each with his own special work to do; but all with their chief forming a board of direction or rather co-ordination and all being mutually dependent on each other.

The actual work of supply will be performed by Brigade Supply Officers who will act as agents for the provision of all necessaries to the troops within the limits of the Brigadier's command.

Units will deal only with their Brigade Supply Officer and they will keep no ledger but will have to be in possession of all the stores shown in the equipment table which concerns them; they wil

also have a copy of an annual price list showing the nomenclature and price of all stores in use with the Army. Demands for stores fall under one of three classes -(i) stores lost or rendered unusable. chargeable to the up-keep account of the unit, (ii) stores of new pattern, not chargeable to the unit, (iii) articles required for the maintenance of the unit, debitable to the annual credit allowance. Demands will be made out in triplicate by means of carbon paper, each store on a separate slip, each class having its own distinctive The actual writing will be reduced to a minimum, coloured paper. the nomenclature, number required, date and initials of the Officer Commanding with a symbol denoting the reason for the demand being all that is necessary. The three slips will go to the Brigade Supply Officer who will check and price them, inspecting, if necessary, any condemned articles; he then returns one copy to the unit to whom it serves as a voucher for the deficiency in its equipment. When the Brigade Supply Officer is in a position to do so, he issues the stores and the unit after noting the cost which will be a debit against it, initials for the receipt on the slip it received and returns it, thus closing the transaction entirely so far as the unit is concerned. When animals are condemned, the assistance of a Veterinary Officer will be required and in the case of certain other stores the services of an expert may be necessary before final condemnation. of dispute the Brigadier will decide and initial the demand slip.

The Brigade Supply Officer will have three sets of filing cabinets for demand slips: (i) for demands waiting to be complied in his next requisition, (ii) for demands complied in requisitions but awaiting supply, (iii) for demands complied with; each of these will be in two sections, one having the demand slips filed under the units designation, the other having them filed under the nomenclature of the stores. As a rule he will prepare a monthly consolidated requisition for all stores which he cannot supply from his own petty stores or from contracts which he has been authorized to make locally. These requisitions will go to the Divisional Supply Officer accompanied by a statement showing to whom the cost is debitable. The requisition will be made out from the cabinet of demands filed under store nomenclature and the statement from those under the After necessary action and check by the Divisional Supply Officer, one copy of the requisition will be returned showing sources of supply from which the stores have been ordered. As a rule all stores will be received by the Brigade Supply Officer who will distribute them to the units concerned, obtaining from them as a receipt their copy of the demand slip which will be sent to the Divisional Supply Officer for comparison with the monthly requisition and for check of the debits to the unit's accounts. The Brigade Supply Officer will be a Staff Officer of the Brigadier and be responsible directly to him for the efficient supply of all necessaries to the troops in the brigade; he will, at the same time, be responsible to the Divisional Supply Officer for the economical working of the The Divisional Supply Officer will be a Staff Officer of

the Divisional General and be responsible to him for the efficient working of supply in the divisional area and to the Director at headquarters for economy. He will have no direct dealings with troops; but from the requisitions of his Brigade Supply Officers he will prepare consolidated indents on the store depôts and his authority will be sufficient for the issue. He will control all local contracts within his divisional area subject to the check and approval of the Director of Contracts; he will keep accounts for all units and for his Brigade Supply establishments, checking all transactions and furnishing the necessary statements and compilations to headquarters. A monthly report showing the cost of upkeep of each unit under certain useful heads will be furnished to the Divisional General to assist him in controlling expenditure and in judging the work of his The Divisional Supply Officer will prepare budget and other estimates and obtain and assign funds as may be necessary. He would refer all extravagant demands to the Divisional General, investigating them himself when necessary; such demands will come sooner or later into considerable prominence when the compiled accounts are compared by the General or eventually at headquarters. This is only a brief outline of the working of supply, and deals, it will be noticed, mainly with equipment; but the points I wish to lay stress on are, first, that the unit has practically no paper work; its one duty being to keep its equipment complete according to an authorized annual table; second, the Brigade Supply Officer does most of the executive work of check, demand and issue and his clerical work should be simple and limited, much business being transacted by personal communication with units; third, in the office of the Divisional Supply Officer is concentrated the bulk of paper work proper and the check of the actual transactions; fourth, economy commences in the unit itself which knows at the very outset the cost of all it does and is aware of its progress in expenditure; fifth, check at every stage is immediate, not alone in the transactions themselves, but also in the prevention of waste or extravagance and this is obtained at the cost of but little time or money.

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Surely the Military Accounts Department has too many doportorm, it keeps the Military purse and issues an increquired for pay and for purchases; it maintains both each and accounts; it comprise expendature and it checks to the area detail every transaction undertaken by corps and departments. It may commercial mind this is hopelessly wrong, it gives for too increase power to the department it removes responsibility from to see a should bear it it prevents the utilization of much variable information and it entails an amount of chaird work out of all preprint the useful results at mind. The Others of the department in a be so occupied with the enormous mass of petty details that an earlier the broader work of time account may

Pay and money generally should be issued by the supply decorment in a similar way to other necessaries The chesk of a first of transactions should be curred out on the spot and at it is a se by the supply department  $-\mathbf{A}$  time and  $|\mathbf{c}|$  improbensive and t>accounts as a whole should be undertaken by an audit brush a Finance Department. The checking of the details of teams. not the duty of an audit department. A very high authority or so mere at accounting. Professor Dicksee has state fifth it " the extension whantage healm throwing is much teaponable to be passed. the warf and t because those who are articles in the hower. transactions engaged upon are better capable of verifying detailed record than these whose only knowledge of the tracks is such as in vibe graned from the relords then we eswords we should not attempt to check the detect of transa in a distinct expension a letter when the very nature of the deat with remarks own to the and the and when it a track. the model on were a required no notes before. As regions the proon which the regard has concerning check and a ditabased and the necessity subgroups agreest distances years I would observe that the age is presed with the real W. could be proper had for in second passes to his and man 1 Cobrels derived by expective from the commandat at a Moreover in the policing against the of and distribution execute all that I rest on terms so and make strainly out that the in any way. Let have frequently in the courty we congraph was about the graph and a few control of the have the months be not a little and owns and example care assorted meetic in Clerk which it we not yet er a one there is so to the residential at fat as case under a of it og ted por y, to untertake them on so has

and to such a minuteness that the cost is out of all proportion to the results. The economist's law of Diminishing Return might easily be applied to this case and stated thus—the return from audit check and countercheck very rapidly diminishes as the cost increases.

In considering the subject of reform in the supply services of the Indian Army it would almost be possible to omit everything save the necessity for a proper training for the personnel, for I have little doubt that, given the training, all the unbusiness-like methods, regulations and accounts would be swept away by the unanimous action of the supply officers. This question of training must be divided into three parts, as it concerns three classes : officers, subordinates and clerks.

Do we now make any attempt to fit the officers of our departments for their business? The officer starts (i) Officers. with a fair military education which has done little more than hint at the existence of our supply organizations and after four or five years of regimental life, he, on his own initiative and for his own personal reasons, is launched on a departmental career. For a year he is usually on probation and during that period he may be supposed to be under training, but it is little more than a name. He is turned loose and left to pick up the work as best he can. There are no teachers, unless the officers, who are already fully employed in carrying on the ordinary work of the department can be called teachers. The officer of a department is neither specially selected for business abilities nor has he had any business education and he is not even trained, when he joins, in the ordinary routine of his own department. We are quite unique The fighting branch have more regard for their efficiency, the fighting officer commences with a fair military education and practically continues under instruction for many years, his fitness is tested at every step and numerous institutions are provided for his technical and higher education. The commercial man starts with a business education, works his way up usually from the very bottom, finds colleges, night schools and technical institutions to help him on his way, and, above all, soon realizes that without thorough knowledge of his job, success in life is impossible. It is only our unfortunate supply man who is not supposed to require any education for his particular branch of life. The wonderful thing is, not that the business is done uneconomically but that it is done at all. Should any one care to investigate this matter further, I would suggest his comparing the training of a Military Accounts Officer with that of a Chartered Accountant.

It is probably a debatable question whether a proportion of our Supply Officers should not be entered direct from private life though a military education and even a short military life have a distinct value to those who are to spend their service in ministering to military wants. Still there is no disguising the fact that a military education is but a meagre equipment for what is mainly a business career. In any case, a school of instruction, well-equipment and properly staffed with experts in all branches of supply business is an absolute necessity for the training of young others and for the higher education of the sources. It is also most desirable that others should be sent home from time to time to acquire new uless and to learn how modern business is conducted and also to obsert how the Home Army deals with its problems of supply. It was the necessary, however to remember that home methods are not recessarily the best or the most suitable to the requirements of the country.

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Divisional Accounts with which they will interlock. The actual transactions can be checked as may be necessary by travelling inspectors from headquarters. I wish to lay particular stress on this important fact—the moment the element of money value is introduced into store accounts, check and audit become simple and efficient as the various accounts interlock and must agree. The store depots should be well equipped with modern devices for the easy and rapid handling of stores in bulk, money laid out in this direction will be money well spent.

All manufacturing establishments will form another branch under a Director; these will include not only the ordnance factories, but also the clothing factories, flour mills, and all other Govern-

ment manufactories of necessaries for the Army; Remount depôts would probably be included with other store depôts. These factories will make stock for the store depôts on the authority of orders from their own Director, they should be managed on the same lines as modern commercial factories, being self-contained with considerable latitude in internal affairs. No attempt at centralization of management or accounts should be made, as real economical working can only be obtained by the direct influence of the factory officers aided by a complete and well-thought-out system of accounts. The Director should guide, control and co-ordinate the work of his factories and judge their work by results.

All indents for the Director-General of Stores at home will be prepared in a separate branch which will also control all contracts made in India.

The idea is to concentrate the actual provision in bulk of all the army requirements in the hands of one branch required and trained to deal with the matter in a thoroughly business way. The branch must be intimately acquainted with all existing sources of supply and be on the look-out for new ones; it will study the markets and their rates, it will make all large contracts and review and approve all those made for small areas by local officers. It will strive to obtain the best possible terms for the State by dealing whenever possible direct with the producers and with large quantities at favourable times. It is obvious that special business aptitude is required in the Director of this branch and it is not certain that a military officer will be found with the special qualities and knowledge required especially at the outset. branch will also deal with the inspection of all supplies and its duties may be briefly stated as the provision of all stores and material required for army work of the best quality and at the cheapest rate.

The Director of Accounts will be responsible for the staff check of all divisional store depôt and factory accounts and for the verification of cash and stock balances. He will make the final compilation and tabulation of the various accounts and place them in the shape best suited for audit by the independent audit department and for use by the heads

of the Army. By compilation, I do not mean the grouping of the petty transactions of internal work, for it must be clearly understood that every divisional supply office, store depôt and factory must be self-contained and maintain and compile its own accounts, as only in this way can expenditure be controlled at the source and true economy obtained. The duty of the Director of Accounts is to co-ordinate all these accounts and to bring them together in such a manner that they show clearly the expenditure on the Army under every useful head. He is thus responsible for the accuracy in working of the system, for furnishing the Army's account with Government for audit and also for supplying the data on which the ultimate verdict of Government on the economical management of the Army will depend. He must obviously be a man with the broadest views of his work, no mere juggler with figures or quibbler of crossed t's and dotted i's; but a man with the welfare of the Army at heart and one who thoroughly realizes that a good system of accounts is one that is a help and not a hindrance to good management.

I must now deal as briefly as possible with a few matters that cannot be dealt with in quite the same way as ordinary equipment.

The question of pay must be placed on a simple and rational basis, and this I have already referred to, and in addition all rules regarding leave, travelling and other allowances should be subjected to a thorough Pay will be issued weekly or monthly by the Brigade Supply Officer by cheques against the monthly cash assignment given him by his Divisional Supply Officer. The weekly pay of a unit would be supplied on a demand from the Officer Commanding and would be adjusted monthly by the submission of a complete and receipted pay roll. Pay should be issued to the men in full, cash payment being made by them for regimental institutions and Hospital stoppages might well be abolished the other charges. amount recovered being microscopic and the labour large. mercantile firm would maintain the establishment for, nor expend the labour and paper we do now on the payment of some nine They approach the matter in a business-like way hundred men. and make it as simple as possible; we have attained considerable success in the direction of complication.

The pay roll can also indicate the men entitled to rations and thus show the total number of rations due to the unit for the month. The unit will demand once a week the daily requirements of rations for the following week, usually this will be an estimated average somewhat less than the probable actual. At the end of the month the unit will pay for any excess or will receive a cash payment for any deficiency. The same principle would also apply to forage.

The value of the free issues of clothing should be considered when determining the consolidated rates of pay and the men should make cash purchases of clothing as they require it from a stock kept by the unit

Stock to a certain value will be allowed as a permanent visit the cost being adjusted when the unit leaves the country and balances checked periodically by the Brigade Supply Officers Signal will be replemed by each indents on the Brigade Supply Officers. This procedure will save much paper work and give the next interest in the preservation of their clothing.

Actual building works will not concern the supply depart that the ordinary work of furnishing barracks and maintaining them in repair who is performed of its duties. It seems possible to place the actual maintains are a barracks in the hands of the troops themselves, stores and inverse being provided by the supply department and the labour by is troops. Plenty of tradesmen are to be found in the ranks of Equations, who would be glad to have occupation for their space that and practise at their trade especially if they were paid for it. To bluespacket does a lot towards keeping his house in good order a not the red cout also?

I have end acoured to be brief but the subject is really too as to be properly dealt with in any one power of reasonable length. It has been may a to write as impersonally as possible and to take the point of your a business man considering critically our existing supply in a conand their results. It is quite certion that a keen civil in their imboard with the best modern business ideas would be array at a the measure of ethniency and even economy attained unit r present antiquated cumbrons and complicated system, but he ... be most deeply groved also at the trightful waste of power. He capped from the outset by he k of business education hange of a every turn by a medicinale of petry restrictions, crusted by bound regulations desired to spend much of his trine in wire most pettifogging kind the others of our supply departments manage, as a rale to do good work and to keep the bus ness g A little thought and enquity and the depots of our syst a patent to not while the remedies are easy to find. In real are ing concentrated yet provid minded administration, simple and the seeing regulations and an interiornt and he ptal system of a these are the requirements. Our system and our meth sis as worthy of a bostored field in reference essential will it experwithin on our own industries or wall it be fired from withto comment unities to bear the secretary using herein after expenditure? We must have a suit out and object Assix a the mere with our years as assertable with a treat our years every year in record increasely to obtain as newer and a restorate by apparets are desired. Where can we wave even not by any restrict on in the notice residence ing non-most assists not be severage to most the first possible equipment, but a seinterest against your in true come a surface interest, against a north from to respect week. Most of use kin we that some extracagance, are et lacy elemente, waste in the use and news.

equipment, waste of time, waste of clerical labour, waste of men's energies and powers, extravagant establishments, extravagant contracts and above all wasted opportunities of effecting economies. My sketch of the remedies may not find favour, some of my ideas may seem utopian and my proposals too revolutionary for practical work, but if at the least I have aroused attention and awakened a desire for reform, I shall not have written in vain. Those who will take the trouble to study earnestly the problem will find, I am convinced, that a revolution is necessary if supply work is ever to be conducted under the motto of "efficiency and economy".

# EDUCATION IN THE NATIVE ARMY.

By Major F. C. Laing, 12th Pioneers.

In the articles which have appeared recently in this Journal dealing with the appointment and education of the Native Officers of the Indian Army, although the means for improving the existing conditions differ in detail, it is evident that in the opinions of the

writers a higher standard of education is necessary.

It is not my intention in this paper to criticise the suggestions put forward, but to open up, if possible, another line of thought which has so far been but lightly touched on or omitted by previous It is manifest that the educational qualifications of both Native Officers and Non-Commissioned Officers are generally of the poorest, the cause having been shown as partly due to want of early schooling and partly to lack of properly directed stimulants to work in the army itself. In order to clear the way for what is to follow a brief digression is here necessary. During the last few years, and notably since the Boer War, it has been the custom for an unmuzzled press to write seathing criticisms on the inefficiency, education, and general uselessness of the British Officer, so much so in fact that the public has by this time got hold of many erroneous ideas, not only regarding the present class of officers, but also as to the advisability of improving what it calls "new blood" into the commissioned ranks. The popular idea now-a-days seems to be that the army is an intricate machine which requires delicate handling by highly trained experts, that the British Officer is in no way an expert, and that unless he becomes one the machine must get out of order: this sounds plausible enough but the idea is nevertheless That the army may be compared to a machine is true enough, but to continue the simile, it is one which is composed of quite simple cogwheels, and levers which only require to be carefully tended by specially trained mechanics. Or, in other words, in a body of fighting men held together by very simple laws and under the guidance of a comparatively few experts, it is neither necessary nor even perhaps desirable, that each individual in our armies, British or Native, should be highly educated, that is to say, should be composed of Officers, N.-C. O's, and men brought to a very high standard of general knowledge. On the contrary, what we require is to have our armies made up of men trained in all that is needful for actual fighting, officers capable of imparting the requisite knowledge, and a few experts able to utilise the trained material in the best way. The mistake generally made by our critics is to exaggerate the necessity for acquiring general knowledge, while minimising, or leaving out, the most important points of all training, namely, the moral and physical.

It must not be supposed that the foregoing remarks are intended to decry the importance of education. What must however be brought home to the nation at large is that if war is to be way a successfully, it must be by warriors trained to endurance and war at arms, gooded by a comparatively few well educated others, it danger so even overlooked when talking of the education of training is that of turning the rink and file into a legion of critical ways ready to cavil, and always ready to throw doubts on the wisdom of any orders received. Uniquestioning obedience is the first principle of ethiciney in war and closely allied to this is the initial cum physical principle of carrying out orders regardless of each

The other of fighting is always a fascinating subject at 1.1 becomes doubly so if we apply them to the problems of training men for war. The application of force in the right direction in war

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The actual and personal application of that force is in the hands of the purior leaders and their men, and the uiting te access of one army over another must be due to its superior fighting 1.8 tion. Let us now examine more closely what we mean by began a qualities. First and foremest must be placed courage and the grait is one which we always hope can be taken for granted, it is neither a certain quality nor one which can be refied on at a times and under all conditions, even the bravest troops have soil rost from paner. It should be remembered that education means training the brain and the quicker the brain acts the greater to vividioss with which surrounding events strike it the real sector of events proceeding and pending must influence the observer on proportion to his understanding and realisation of extreme darger may produce pance, hence it next be not an unmixed bewirg to have gar kewatted or highly educated men in our ranks and it will a be preferable to have more stolled and the kinker'ed fighting new The danger then to be avoided in that of educating the natwho expects continued in to keeply reason the dangers of war t ment units for him to arrive at that high standard of our regwhich has been produced by contained of cold ation, coupled and those high sent cents of hinear which enable har pean trages overs me had it if four and nervousness. The stable in talking Japanese and Rossan in the recent war courts shows the value of in receasing the leabers, the wilders on either side should be rate of bravery the randors were approximately equal but to exchange of the plan r Japanese Off or and Nin Comp . . . . . Officer to little resemble. The strategical and take a superiores of the disputes on as ween to corshering mount. Control were research with the who was I had most to troughter to the layer -Live of a mary supplied the recession in rate and over a color figure. to north Lorentz to track that to win but win to figure go to a transport title on the first property of the state of the respective and the first time of their terms are several at higher No see Other and Net. Of are not one in the with the toproblems except in a very minor degree; their role is to carry out orders regardless of danger, and to influence the fight in a purely local way; the handling of men in close proximity to the enemy is not learnt by means of books and examinations; actual drill movements are now-a-days simple and allow extreme latitude of All Native Officers and N.-C. O's. in regiments can read and write and experience little difficulty in mastering the actual drill; what is required however, and what is lacking in all military drill books, is the teaching of moral control: it is small use for an officer, British or Native, being a "Master of Arts" if at the critical moment he forgets what he has been taught and is unable through nervousness to issue the right orders or to take such necessary action as the needs of the moment demand. The deduction we therefore arrive at is that we must endeavour to find some means of inculcating and encouraging morale; lest the reader at this point may perhaps feel indignant to think that doubt has been cast upon the courage of our Native Officers and indirectly on that of the men, it should be understood that in this case it applies not so much to actual personal bravery which our Native Army has and frequently shown it possesses, but to the mental ballast and nerve required to assist the fight by taking the best line of action at any period of its progress, and the application of previous knowledge to the problem in hand. If this has been made clear, we now come to the question as to what line of teaching should be adopted in order to encourage morale in the Indian Army. It has been abundantly proved in the Russo-Japanese war that love of country, i.e., true patriotism, has been the bed rock of Japanese success; it has in fact taken the place of any other feeling, and as their religious sentiments are further bound up in this feeling, fear of death has been practically eliminated, and what this means to an army it is scarcely necessary to point out. Unfortunately, perhaps, for us this extreme patriotism is almost, if not entirely, wanting in the Native Army, and, considering the circumstances, it is not surprising, forwe have mercenary soldiers fighting for an alien race in a cause which very often is not fully understood. What then must be done to find a substitute and what lines should the education of the Native Army follow? I preferably mention the Native Army as a whole because at present Native Officers are supplied chiefly through the ranks, and education must be improved from the very beginning to be of any value.

To find the answer to the question asked, we have first of all to recognise that moral, mental, and physical vigour are largely dependent on each other. The question of physical training is outside the scope of this article, but it must be made clear that the two former to a large extent owe their existence to the latter. The feeling a man in good physical condition has that he is capable of meeting an adversary in any contest with every chance of success at once gives him the confidence necessary to help him half-witowards victory; if, on the other hand, he feels that his opponent

his superior in physique and skill-at-aims he is already by the towards defeat. It need searcely be pointed out that bed by the is just as great now-a days with the rifle as the chief we spen, we was in the days of the sword and battle axe, and further that be to hand conflict is as practical a certainty in any modern, but to hand conflict is as practical a certainty in any modern but to hand conflict is as practical a certainty in any modern but to all now for the soldier to be in the fullness of his strength as the it was. To wage successful war officers and men must be at the soundest physical condition. If venture to think that a large procentage are in no way fitted for any great physical taligue, proceeding system of physical training is slipshod and waiting in extinuity and partly because the native is inclined by nature to proceedingly ease and comfort to healthy exercise.

The first thing therefore, in the education of the native of missioned and non-commissioned ranks is to encourage place a training and not only to encourage it but to insist upon it. In a recent memorand in curatisting from Head Quartersemples says a upon the desirability of British Officers getting more into ten h \* their men. In order to do this the hest was is to associate corswith them, not only during work but in their lessure hours do this requires considerable fact, for it is a piculiarity of the rate that interest in his private life except his intimate life apart to some state of his corps and the health of his male belongings may res be do med either inquisitiveness or such extreme good nature that a friends intercourse must be turned gradually in the direct and some favour to be schould either on the individuals own between for his relatives and friends shence follows the desirable is meeting the native rinks in some general way not combined noticities of favouritism. The playing of games in which a British Officers pain is one good way and Native Or are a N.C. Os should be encouraged to do this part as as men when once promoted frequently drop at gas a possibly through the most deministry in the that process exerts in the derighters, to their dignets, often because profit in a their mends speak a come, and to are made means nothing how these placed and neutral decay. The playing of games is however morely one mothed of indusing friendly intercourse between the native ranks and their Birtish (10) ers, there are several take, ter example shikar" expense parties and such as two duries as recent assence etc. Assening that such nears as the acare train by regiments to establish greater intime a between the men and their leaders we find by degrees personal attached respringing up and it is the whole most to a large eaters take to proceedings to the Pere of the true saving than the second decided the process and the application research to the arms than the and other profession. From a miteral is most therefore be with a arrest boundary rather that making in his assemble got which carries increased weight in the Irlan Army fire it as a

quicker in detecting any lack of it in his officers than the sepoy, and hence the care which should be exercised, not only in granting commissions to Native Officers, but also to the admission of British Officers into the Indian Army.

The cultivation of morale and physique having been briefly dealt with, the question of education may now be considered. Much has been done of late years to break down the hide-bound conventions of military training, greater freedom is allowed to British Officers and even to Native Officers; at the same time this freedom of action is still circumscribed, and until it is more complete, there can be small hope that the Native Army will reach the standard required for modern war. If by education we mean book learning, it is evident that the more highly educated Native Officers become, the less will they feel inclined to defer to the British Officers for guidance, but unless the system of dry-nursing still in vogue is modified the British Officer will feel compelled to keep this spirit of independence in check, and it therefore becomes desirable, not only that he should be given greater powers, but the N. O. should also share in this increase: up to the present the N.O is a trainer in name chiefly, and the N.-C. O. is too often merely a cipher. How often do we see in regiments both N. O's, and N.-C. O's, obviously unsuited for their job. Good conduct even combined with zeal is insufficient now-a-days to justify promotion to the higher grades; the former qualification is in itself frequently nothing more than a sign of dullness, and promotion should be entirely on Nature's principle of selection. True this principle is followed to a certain degree but it is still incomplete, and we still find undersirables in the Commissioned and Non-Commissioned ranks. The C.O. is the man best fitted to judge the capabilities of his officers-in any case he ought to be-and he should have the power of elimination in his hands. Let the C.O. in his regiment have the powers of a Brigadier General, the Double Company and Squadron Commanders the present powers of the Commanding Officers, except as regards Summary Courts-Martial. and the Native Officers the powers of the present Double Company and Squadron Commanders. It may be asked, what has this to do with education? It has a great deal; because all officers would be obliged to accept increased responsibilities, and this feeling of responsibility is one great factor in enlarging the mind. Suggestions have been made for classes, schools and colleges for educating the Native Army, a counsel of despair, I venture to think, implying want of confidence in regimental officers to teach their men. It is certainly highly desirable that the youths who join the army should have had some schooling; but the question we are here concerned with is the education of the Native Officer and Non-Commissioned of army service for the latter. Officer after some years Let the British Officer feel that he is a staff college professor in embryo, and let him be the actual trainer of his men from the day they join to the day they leave. Let him be in addiassistant professor to the Commanding Officer, who should not

Stock to a certain value will be allowed as a permanent advance, the cost being adjusted when the unit leaves the country and the balances checked periodically by the Brigade Supply Officers. Stock will be replenished by cash indents on the Brigade Supply Officer. This procedure will save much paper work and give the men an interest in the preservation of their clothing.

Actual building works will not concern the supply department but the ordinary work of furnishing barracks and maintaining them in repair will be part of its duties. It seems possible to place the actual maintenance of barracks in the hands of the troops themselves, stores and material being provided by the supply department and the labour by the troops. Plenty of tradesmen are to be found in the ranks of British units, who would be glad to have occupation for their spare time and practise at their trade especially if they were paid for it. The blue-jacket does a lot towards keeping his house in good order, why not the red coat also?

I have endeavoured to be brief but the subject is really too vast to be properly dealt with in any one paper Conclusion. of reasonable length. It has been my aim to write as impersonally as possible and to take the point of view of a business man considering critically our existing supply methods and their results. It is quite certain that a keen civilian thoroughly imbued with the best modern business ideas would be amazed at the measure of efficiency and even economy attained under the present antiquated, cumbrous and complicated system; but he would be most deeply grieved also at the frightful waste of power. Handicapped from the outset by lack of business education, hampered at every turn by a multitude of petty restrictions, crushed by iron bound regulations, doomed to spend much of his time in work of a most pettifogging kind, the officers of our supply departments yet manage, as a rule, to do good work and to keep the business going. A little thought and enquiry and the defects of our system are patent to all while the remedies are easy to find. Thorough training, concentrated yet broad-minded administration, simple yet farseeing regulations and an intelligent and helpful system of accounts, these are the requirements. Our system and our methods are not worthy of a business nation, reform is essential, will it come from within on our own initiative or will it be forced from without by a Government unable to bear the ever-increasing burden of military expenditure? We must have a sufficient and efficient Army and the mere sufficiency is always expensive while the efficiency becomes every year more and more costly to obtain as newer and more elaborate equipments are devised. Where can we save, certainly not by any reduction in the numbers of fighting men, most assuredly not by starving them of the best possible equipment; but surely by interesting everyone in true economy and by introducing real business methods into our supply work. Most of us know that waste and extravagance are of daily occurrence, waste in the use and misuse of equipment, waste of time, waste of clerical labour, waste of men's energies and powers, extravagant establishments, extravagant contracts and above all wasted opportunities of effecting economies. My sketch of the remedies may not find favour, some of my ideas may seem utopian and my proposals too revolutionary for practical work, but if at the least I have aroused attention and awakened a desire for reform, I shall not have written in vain. Those who will take the trouble to study earnestly the problem will find, I am convinced, that a revolution is necessary if supply work is ever to be conducted under the motto of "efficiency and economy".

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writers a higher standard of education is necessary.

It is not my intention in this paper to criticise the suggestions put forward, but to open up, if possible, another line of thought which has so far been but lightly touched on or omitted by previous contributors. It is manifest that the educational qualifications of both Native Officers and Non-Commissioned Officers are generally of the poorest, the cause having been shown as partly due to want of early schooling and partly to lack of properly directed stimulants to work in the army itself. In order to clear the way for what is to follow a brief digression is here necessary. During the last few years, and notably since the Boer War, it has been the custom for an unmuzzled press to write scathing criticisms on the inefficiency, want of education, and general uselessness of the British Officer, so much so in fact that the public has by this time got hold of many erroneous ideas, not only regarding the present class of officers, but also as to the advisability of improving what it calls "new blood" into the commissioned ranks. The popular idea now-a-days seems to be that the army is an intricate machine which requires delicate handling by highly trained experts, that the British Officer is in no way an expert, and that unless he becomes one the machine must get out of order: this sounds plausible enough but the idea is nevertheless That the army may be compared to a machine is true enough, but to continue the simile, it is one which is composed of quite simple cogwheels, and levers which only require to be carefully tended by specially trained mechanics. Or, in other words, in a body of fighting men held together by very simple laws and under the guidance of a comparatively few experts, it is neither necessary nor even perhaps desirable, that each individual in our armies, British or Native, should be highly educated, that is to say, should be composed of Officers, N.-C. O's. and men brought to a very high standard of general knowledge. On the contrary, what we require is to have our armies made up of men trained in all that is needful for actual fighting, officers capable of imparting the requisite knowledge, and a few experts able to utilise the trained material in the best way. The mistake generally made by our critics is to exaggerate the necessity for acquiring general knowledge, while minimising, or leaving out, the most important points of all training, namely, the moral and physical.

It must not be supposed that the foregoing remarks are intended to decry the importance of education. What must however be brought home to the nation at large is that if war is to be waged successfully, it must be by warriors trained to endurance and skillaterms, guided by a comparatively few well educated officers; the danger so often overlooked when talking of the education of the army is that of turning the rank and file into a legion of critics always ready to cavil and always ready to throw doubts on the wisdom of any orders received. Unquestioning obedience is the first principle of efficiency in war, and closely allied to this is the moral-cum-physical principle of carrying out orders regardless of cost.

The ethics of fighting is always a fascinating subject and it becomes doubly so if we apply them to the problems of training men for war. The application of force in the right direction in war

time is probably within the province of genius.

The actual and personal application of that force is in the hands of the junior leaders and their men and the ultimate success of one army over another must be due to its superior fighting quali-Let us now examine more closely what we mean by fighting qualities. First and foremost must be placed courage, and though it is one which we always hope can be taken for granted, it is neither a certain quality nor one which can be relied on at all times and under all conditions; even the bravest troops have suffered from panic. It should be remembered that education means training the brain, and the quicker the brain acts the greater the vividness with which surrounding events strike it; the realisation of events proceeding and pending must influence the observer in proportion to his understanding and realisation of extreme danger may produce panic; hence it may be not an unmixed blessing to have quick-witted or highly educated men in our ranks and it would be preferable to have more stolid and thick skulled fighting men. The danger then to be avoided is that of educating the native soldier sufficiently for him to keenly realise the dangers of war but insufficiently for him to arrive at that high standard of courage which has been produced by centuries of education, coupled with those high sentiments of honour which enable European troops to overcome natural fear and nervousness. The stubborn fighting of Japanese and Russian in the recent war clearly shows the value of morale among the leaders: the soldiery on either side showed the utmost bravery, the numbers were approximately equal, but the excellence of the junior Japanese Officer and Non-Commissioned Officer tell their own tale. The strategical and tactical superiority of the Japanese armies was not overwhelming, nevertheless the victory remained with the side which had most devoted patriots, the Japanese love of country supplied the necessary morale and overcame all opposition, and I venture to think that to win battles in the future the teaching of the subordinate ranks must be directed more to the encouragement of morale than to any set standard of learning. The Native Officer and N.-C. O. are not concerned with tactical

problems except in a very minor degree; their role is to carry out orders regardless of danger, and to influence the fight in a purely local way; the handling of men in close proximity to the enemy is not learnt by means of books and examinations; actual drill movements are now-a-days simple and allow extreme latitude of All Native Officers and N.-C. O's. in regiments can read and write and experience little difficulty in mastering the actual drill; what is required however, and what is lacking in all military drill books, is the teaching of moral control: it is small use for an officer, British or Native, being a "Master of Arts" if at the critical moment he forgets what he has been taught and is unable through nervousness to issue the right orders or to take such necessary action as the needs of the moment demand. The deduction we therefore arrive at is that we must endeavour to find some means of inculcating and encouraging morale; lest the reader at this point may perhaps feel indignant to think that doubt has been cast upon the courage of our Native Officers and indirectly on that of the men, it should be understood that in this case it applies not so much to actual personal bravery which our Native Army has and frequently shown it possesses, but to the mental ballast and nerve required to assist the fight by taking the best line of action at any period of its progress, and the application of previous knowledge to the problem in hand. If this has been made clear, we now come to the question as to what line of teaching should be adopted in order to encourage morale in the Indian Army. It has been abundantly proved in the Russo-Japanese war that love of country, i.e., true patriotism, has been the bed rock of Japanese success: it has in fact taken the place of any other feeling, and as their religious sentiments are further bound up in this feeling, fear of death has been practically eliminated, and what this means to an army it is scarcely necessary to point out. Unfortunately, perhaps, for us this extreme patriotism is almost, if not entirely, wanting in the Native Army, and, considering the circumstances, it is not surprising, forwe have mercenary soldiers fighting for an alien race in a cause which very often is not fully understood. What then must be done to find a substitute and what lines should the education of the Native Army I preferably mention the Native Army as a whole because at present Native Officers are supplied chiefly through the ranks, and education must be improved from the very beginning to be of any value.

To find the answer to the question asked, we have first of all to recognise that moral, mental, and physical vigour are largely dependent on each other. The question of physical training is outside the scope of this article, but it must be made clear that the two former to a large extent owe their existence to the latter. The feeling a man in good physical condition has that he is capable of meeting an adversary in any contest with every chance of success, at once gives him the confidence necessary to help him half-way towards victory; if, on the other hand, he feels that his opponent is

his superior in physique and skill-at-arms, he is already half-way towards defeat. It need scarcely be pointed out that bodily fatigue is just as great now-a-days with the rifle as the chief weapon as it was in the days of the sword and battle-axe, and further that hand-to-hand conflict is as practical a certainty in any modern battle as it was in the days of plate armour, and it is therefore just as essential now for the soldier to be in the fullness of his strength as ever it was. To wage successful war officers and men must be in the soundest physical condition. I venture to think that a large percentage are in no way fitted for any great physical fatigue, partly because cantonment life is not conducive to activity, partly because our system of physical training is slipshod and wanting in continuity, and partly because the native is inclined by nature to prefer

bodily ease and comfort to healthy exercise.

The first thing, therefore, in the education of the native commissioned and non-commissioned ranks is to encourage physical training, and not only to encourage it but to insist upon it. In a recent memorandum emanating from Head-Quartersemphasis was laid upon the desirability of British Officers getting more into touch with their men. In order to do this the best way is to associate ourselves with them, not only during work, but in their leisure hours. But to do this requires considerable tact; for it is a peculiarity of the native that interest in his private life, i.e., of his intimate life apart from the state of his corps and the health of his male belongings, may readily be deemed either inquisitiveness, or such extreme good nature that all friendly intercourse must be turned gradually in the direction of some favour to be solicited either on the individual's own behalf or for his relatives and friends—hence follows the desirability of meeting the native ranks in some general way not conducive to notions of favouritism. The playing of games in which the British Officers join is one good way, and Native Officers and this, N.-C. O's should be encouraged to do particularly promoted frequently drop all games, as men when once through the mistaken native notion that physical exertion is derogatory to their dignity, often because promotion in their minds spells "aram," and "aram" means nothing less than physical and mental decay. The playing of games is, however, merely one method of inducing friendly intercourse between the native ranks and their British Officers; there are several others, take, for example, "shikar," exploring parties, and such military duties as reconnaissance, etc. Assuming that such means as the above are taken by regiments to establish greater intimacy between the men and their leaders, we find by degrees personal attachment also springing up and it is this which must, to a large extent, take the place of patriotism. There is no truer saying than "familiarity breeds contempt," and this applies more surely to the army than to any other profession. Friendly intercourse must therefore be within strict limitations, and further, the saving "noblesse oblige" is one which carries increased weight in the Indian Army, for no man is

quicker in detecting any lack of it in his officers than the sepoy, and hence the care which should be exercised, not only in granting commissions to Native Officers, but also to the admission of British Officers into the Indian Army.

The cultivation of morale and physique having been briefly dealt with, the question of education may now be considered. Much has been done of late years to break down the hide-bound conventions of military training, greater freedom is allowed to British Officers and even to Native Officers; at the same time this freedom of action is still circumscribed, and until it is more complete, there can be small hope that the Native Army will reach the standard required for modern war. If by education we mean book learning, it is evident that the more highly educated Native Officers become. the less will they feel inclined to defer to the British Officers for guidance, but unless the system of dry-nursing still in vogue is modified the British Officer will feel compelled to keep this spirit of independence in check, and it therefore becomes desirable, not only that he should be given greater powers, but the N. O. should also share in this increase: up to the present the N.O is a trainer in name chiefly, and the N.-C. O. is too often merely a cipher. How often do we see in regiments both N. O's and N.-C. O's obviously unsuited for their job. Good conduct even combined with zeal is insufficient now-a-days to justify promotion to the higher grades; the former qualification is in itself frequently nothing more than a sign of dullness, and promotion should be entirely on Nature's principle of selection. True this principle is followed to a certain degree but it is still incomplete, and we still find undersirables in the Commissioned and Non-Commissioned ranks. The C. O. is the man best fitted to judge the capabilities of his officers—in any case he ought to be—and he should have the power of elimination in his hands. Let the C.O. in his regiment have the powers of a Brigadier General, the Double Company and Squadron Commanders the present powers of the Commanding Officers, except as regards Summary Courts-Martial. and the Native Officers the powers of the present Double Company and Squadron Commanders. It may be asked, what has this to do with education? It has a great deal; because all officers would be obliged to accept increased responsibilities, and this feeling of responsibility is one great factor in enlarging the mind. Suggestions have been made for classes, schools and colleges for educating the Native Army, a counsel of despair, I venture to think, implying want of confidence in regimental officers to teach their men. It is certainly highly desirable that the youths who join the army should have had some early schooling; but the question we are here concerned with is the education of the Native Officer and Non-Commissioned Officer after some years of army service for the latter. Let the British Officer feel that he is a staff college professor in embryo, and let him be the actual trainer of his men from the day they join to the day they leave. Let him be in addition assistant professor to the Commanding Officer, who should not only

be capable of instructing his officers in the higher paths of military education but should actually do so. Let the regiment really be four complete units in one, the Double Company Commander being Commanding Officer in fact as well as in name and the Battalion Commander the Brigadier; an Adjutant would not be necessary nor possibly a Quartermaster, and any staff pay saved might well be distributed among the Double Company Officers for extra work done. Every officer, British or Native, shows an aptitude or preference for certain things, and after a general standard of learning has been reached, the appointment of instructors should depend, within reason, upon such aptitude. It is not wisdom to ask a man who can't draw to be a teacher of topography, or a man of weak physique to be an instructor in physical training. The British Officer should be the supervisor and teacher only, the Native Officer the real commander of his company. How often do we not see during a field-day British Officers, both senior and junior, taking charge of an impossibly longfiring line, giving orders to companies and sections regardless of the presence of their legitimate commander and performing duties completely outside their province or powers in actual war! Nor are they entirely to blame for this if anything goes wrong, as the nearest British Officer is supposed to be responsible. Commanding Officers naturally wish their battalions to do well specially under the eyes of Inspecting-Generals, and they cling to every chance of personally influencing the operations: that such a state of nervousness is common, no one will probably deny, and that it permeates the lower ranks is specially obvious. The Native Officer shirks giving independent command to his Non-Commissioned Officer for fear they will "let him in" -surely then our training is deficient from the beginning. ever realise that owing to the paucity of British Officers in the Indian Army a big campaign will mean that regiments who have suffered severely will have to depend largely not only on their Native Officers but on British Officers brought in from any where and everywhere? There is practically no reserve of British Officers, and, knowing this, it is more than ever necessary to train our Native Officers and Non-Commissioned Officers to a spirit of independence.

[N.B—It might be added here that every recruit should be taught "Sahib's Hindustani" when he joins, otherwise British Officers drafted in from other regiments and possibly British regiments to replace casualties will not be of much use [

At the present stage of the Native Officer's education and training it is perhaps impossible to leave very much to them, but if, as suggested above, the native commissioned and non-commissioned ranks are made from the beginning to feel their actual responsibilities and powers, they would not suffer from that common disease colloquially termed "Garbari." The constant attendance of Native Officers and Non-Commissioned Officers at classes away from their regiments is not only detrimental to the regiment but should not be necessary, for the British Officers in their proper capacity as teachers should be quite capable of instructing them in everything: owing to these classes it sometimes happens that Double Company Commanders are left with only one Native Officer per company during that very important time of

Double Company Training. If garrison classes are done away with for British Officers, why not do away with classes for N.O'.s and N-C.O's.? If regiments did their own teaching from the beginning in a sound and systematic way there would be no need for classes; an examination is a perpetual Sword of Damocles over British and Native Officers, and, even granted that examinations are necessary, the regiment is the place to work up for them. To further the training of the Native Army the British Officers should be detailed as seldom as possible for outside duties; for example, by giving all Commanding Officers greater powers there would be less necessity for courtsmartial, and archaic duties on station boards might be advantageously abolished or minimised. In a word, to raise the standard of education in the native army we want more time, more power, and more money. The latter must be considered however unpalatable, as books, instruments, writing materials and plant of various kinds are necessary. One last word may, perhaps, be added: as will be seen above, no actual curriculum of teaching has been suggested, for it may be taken for granted that the subjects are the same for Native Officers as for British but of a simpler type, and it must not be forgotten that mere book learning must be ever subordinate to the encourage. ment of morale and physique.

# PHYSICAL TRAINING OF THE INFANTRY SOLDIER IN INDIA.

# By "G. A. T."

Object of Physical Training.

To make a man an efficient soldier from a physical point of view.

1. Ability to march.

Qualifications of an "efficient soldier" from a physical point of view.

2. Activity, agility and fitness, combined with stamina.

3. Capability of surmounting obstacles and of getting over rough ground and ascending or descending hills fully equipped at a rapid pace.

4. Efficiency in the use of his weapon.

Reasons for the above necessary qualifications.

Marching is a sine qua non of an "efficient soldier"; it is the means by which he ultimately achieves his object, i.e., that of arriving within striking

distance of his enemy.

It is obvious therefore that great attention should be paid to this part of a soldier's training and to be able to perform a long march or succession of long marches which will most certainly be required of a soldier in time of war, he must naturally be fit, and so a large amount of practice is required in time of peace.

A great deal of attention is paid to shooting in the Army; this no doubt is very necessary, but it seems to be often overlooked that a soldier may have to perform a series of long marches before he has an opportunity of using his rifle, and if he is incapable of performing those marches without suffering undue fatigue, he is only an encumbrance and the great pains taken and the time spent over his instruction in shooting will have been thrown away.

Those officers who were in South Africa know that in a great many columns, an immense amount of marching had to be accomplished without a Boer being seen, and the result of this constant "trekking" was, that a good many men, at first, succumbed to the wear and tear to their health and feet, and helped to swell the numbers in hospital.

It is almost needless to add that those casualities are exactly what a General wishes to avoid, or at any rate reduce to a minimum, and this can only be arrived at by constant practice in marching in peace time.

Activity, fitness, and agility combined with stamins.

It is generally recognised that the soldier of the present day has to be especially quick with both his brains and with his legs.

In an attack, he must get over ground as rapidly as possible, from cover to cover and during rushes, and I think I am right in saying that the best way to avoid shell fire is to run forward as rapidly

as possible, probably 300 or 400 yards; by running, I do not mean a gentle double, but as rapid a pace as can be managed, remembering that the soldier is encumbered with rifle and ammunition.

This applies equally to rushes.

Now to do this, a man must be "fit" and able at all times to do it, and unless he is trained in peace time and remains in training he will not be able to do it when suddenly called upon. Let those who are sceptical of this, and have not run lately, try and run 50 or 60 yards, (the length of a rush in the attack) much less 300 or 400 yards, (necessary to avoid shell fire) at top speed, and I think the result will prove me right.

The soldier moreover will be carrying ammunition and a rifle, possibly a blanket, or great coat, the ground in all probability will be rough and uneven, and all the more therefore will it be understood that activity, fitness, and agility in a soldier are most essential

qualities.

I have already called attention to the fact that on active service long and arduous marches must probably be undertaken before obtaining actual contact with the enemy: it must further be remembered that the end of a march by no means finishes the day's work; if an actual action does not take place, there still remain a number of arduous duties to perform, such as outpost duty, picqueting hills, digging entrenchments, etc., and great hardships may have to be undergone through extreme heat or cold, wet, paucity of food, want of rest and sleep or other deprivations inseparable from a campaign.

All these entail a great strain on the constitution and are naturally reduced to a minimum in time of peace; the soldier must therefore possess great stamina to meet these unavoidable strains on nature in time of war, and his general health and physical fitness must be of a high standard or else he will break down wholly or partially, and fall out temporarily or permanently from the fighting

line where his place should be.

It must not be forgotten that for every soldier who thus becomes a casualty, a certain number of his comrades are also withdrawn from the fighting line to convey the sick to the base hospitals, and therefore it should be impressed on the soldier that it is his bounden duty to keep himself fit and in such a state of health, that his constitution will enable him to withstand hardships.

It may be urged still further that these qualifications are the more necessary in the case of scouts, but I have purposely omitted mentioning these, as so much more is expected from scouts that

their training comes under the heading of a speciality.

I am dealing merely with the ordinary officer and soldier.

Under this heading it must be noticed that on manœuvres artificial obstacles are seldon if ever employed owing to great expense and shortness of time available for their construction, and yet

Capability of surmounting obstacles and getting over rough ground.

on service the obstacles that will have to be

surmounted will be frequent and severe.

It must be remembered that these obstacles will be found in all probability close to the enemy's position, and consequently at the end of an attack, when the soldier is tired and overstrained, and they will have to be surmounted as rapidly as possible. For these reasons therefore the soldier should be trained to surmount as severe obstacles as possible under regimental arrangements, and taught the correct way of carrying his rifle over the obstacles.

Moreover, the ground over which an attack is made is sure to present many obstacles such as ditches, hedges, banks, etc., which might not be difficult to surmount in running kit, but which will form formidable obstacles when encumbered with a rifle and carry-

ing ammunition and in heavy boots.

In India in particular where frequent expeditions are undertaken in mountainous districts, strewn with obstacles and intersected with nullahs, the necessity for getting over rough ground and mov-

ing rapidly up and down hills must be very apparent.

Those who have taken part in a frontier expedition or have manœuvered in mountainous country, will know the great fatigue entailed in ascending, and descending high hills, and the difficulty experienced in performing this feat rapidly enough to cope with the movements of the enemy.

When added to this it is remembered that the rifle has to be fired or the bayonet used at a time when the soldier is out of breath the necessity for being in a very fit condition will at once be

recognised.

This, to a great extent, comes under the heading of "stamina." but as in addition it entails frequent jumping of nullahs, rocks, fallen trees, and severe climbing, I have classified it under the heading "surmounting obstacles.

The principles involved apply equally to an attack or retirement over any rough or uneven ground, and at the moment of the actual assault, it is certain either a deep trench or wall or sangar, must be surmounted, before arriving at close quarters with the enemy.

One of the many accomplishments of the soldier therefore must include capability of surmounting obstacles, ascending or descending hills, getting over rough ground at a rapid pace and fully equipped.

A short time ago it was stated authoritatively by many people Efficiency in the use of his weapon. that the days of hand-to-hand fighting was a thing of the past.

The South African and the Russo-Japanese wars have shown us that superiority of fire alone will very frequently not produce decisive results.

Times without number had the Boers remained in their position to meet the final rush, decisive results would have been obtained, and yet the number of indecisive results owing to the cause was very great.

They preferred to follow the maxim that "those who fight and run away live to fight another day," though in their favour it must be remembered that they were not armed with the bayonet and consequently they had good cause to evacuate a position before coming to close quarters.

On the other hand in the Russo-Japanese War, the final decisive

result was nearly always brought about by the bayonet.

The Japanese claim that a great many of their fights were won by the bayonet, and they further claim that this was the result of their superiority in the use of their weapon, which superiority was only obtained by frequent practice in time of peace. It stands to reason that when attackers and defenders are both armed with the bayonet, the final test must be decided by the use of cold steel, as the defenders, if skilled in the use of their weapon, and confident in their ability to use it, will in all probability not evacuate their position, which will certainly be skillfully guarded with obstacles and entrenchments, by fire alone, and even should the defenders evacuate before the final assault, the attackers will lose half the benefit of their victory if they cannot complete it with the bayonet.

Another point to be noticed is that the final assault on a position is generally made at night or dawn, and at this period, rifle fire, owing to darkness and confusion and liability to fire on one's own side,

is discarded in favour of the bayonet.

On the Indian frontier the bayonet is frequently used to stop

Ghazi rushes, and to clear the enemy from sangars.

This was especially noticeable in the late expeditions. If then in peace time a soldier is not taught the use of the bayonet and is not confident in his ability to use it efficiently as a weapon of offence or defence, he will lack that dash and élan in war time, which is so necessary to bring about a decisive result.

The soldier must therefore learn to fight with his bayonet in peace time, so that when called upon to use it in war, he will have

confidence in his ability to use it effectively.

Having discussed the reasons for the necessity for the soldier to possess the above qualities to become efficient, I will now consider how his training should be carried out to bring about the required results.

For this purpose the soldier must be classified under two

headings-

(1) The recruit who is undeveloped, and has to gradually increase his strength, agility, and capability for muscular work.

(2) The trained soldier who has passed through his recruit's course and has to be kept "fit," or better still, keep himself "fit."

In India the recruit does not exist in the British service, except in very rare cases, but drafts from England can well be classified

under this heading.

They have doubtless undergone a recruit's course at the depôt or with the home battalion but before coming to India they have probably been on furlough, the sea voyage has made them soft, they are young and unaccustomed to tropical climates and therefore they should receive a further course of three months' physical training on joining the Indian Battalion.

I propose therefore to call them recruits and discuss the best method of training them (the training will apply to the Indian Army equally).

From what I have said regarding the qualifications of an efficient soldier, it will be seen that it is not necessary to make a soldier a "strong man."

The "strong man" does not necessarily fulfill the conditions of an "efficient soldier"; indeed the "strong man" is often heavy and cumbersome from over production of muscle, and is not active or quick.

He has probably developed his muscles by the use of gymnastic apparatus or weight lifting, both of which are liable to cause strain.

Further, every soldier is not capable of becoming a "strong man": a general high standard throughout a battalion or regiment cannot be arrived at, every man is not a born gymnast, and it takes a long and laborious course of gymnastics to attain any high degree of proficiency.

Therefore on the advice of the medical authorities and from practical experience, it has been found better to substitute light free exercises, combined with running, jumping, etc., for work on apparatus.

Every man can be taught to run jump, vault and perform simple exercises such as physical drill, with and without arms, and these exercises if performed under proper supervision entail no liability to strain and are more productive to general fitness and activity, and with frequent practice by all ranks, a regiment or battalion can attain a high standard of general health, and physical efficiency.

The recruit on joining has probably never had any physical

training and is frequently moreover underfed.

There is no system of national physical training as is the case with other nations, such as the Danes. Swedes, Swiss, and Japanese; in these countries the training commences from early boyhood, and strength and activity are thereby increased by progressive stages.

In the case under question, i.e., drafts from England, the recruit is soft from idleness while on furlough, and inactivity on boardship. He must therefore receive a course of progressive training and the training must be conducted under principles of common sense.

It is well known that if a horse is galloped at top speed, when he is untrained his wind will suffer or his tendons and ligaments will give away, and this applies equally to an untrained man, with regard to his heart. Therefore it should not be forgotten by company commanders that weakly men, and men lately from hospital should not work with the other men, but should be most carefully trained and not overworked.

The object of the recruits training is a gradual increase in his

strength, agility and capacity for muscular work.

The principle of progression from easy exercises of short duration to more difficult exercises of longer duration is therefore essential.

Unaccustomed movements in gymnastic postures are not suitable, for they produce an amount of fatigue physical Training by and expenditure of nervous and muscular

Physiological principles of Physical Training by M. S. Pambrey.

energy, which are disproportionate to the work done.

Marching without a load is therefore suggested as a suitable exercise to commence with.

Again in order to improve his wind, the recruit must receive

instruction in running.

By the word "wind" is meant the capacity of the heart and lungs to accommodate themselves to the demands made upon them by muscular work.

Without going deeply into the subject I would point out that the running must be carried out under a certain amount of scientific principle and the recruit should be frequently medically examined.

It is a fact that men with defective heart action can be practi-

cally cured by running, scientifically carried out.

The principle therefore under which instruction in running should be taught is that of progression, and great care must be taken and proper supervision exercised during this portion of the recruit's training.

In employing the word "training" I mean the training of the heart and if the heart of a healthy man becomes weak or disordered,

it is probable that the training has been bad.

It is wrong to run a recruit for 6 or 7 minutes at the commencement of his training and yet how often is this done and even for longer periods: half a minute run and then one minute rest to allow the heart to recover its normal state is sufficient, then a further run of half a minute and a further rest of a minute; after each run the recruit should be carefully inspected and if any man shows great signs of distress, such as laborious breathing, twitching of the nose, sighing or shortness of breath, he should be examined (medically) at once.

From this on the training should be progressive, i.e., the duration of run should be gradually increased and the period of rest decreased.

During the latter portion of the instruction sprints of 30 or 40 yards should be practised; the object of this was mentioned above, i.e., to train the soldier for rushes in an advance in the field.

Running should not be commenced until the recruit is fairly "fit," in fact not until he has been under training for about three weeks. This refers more especially to the British soldiers.

In addition to marching and running the recruit must be taught jumping, high and long vaulting with both hands, and the correct way of surmounting obstacles.

\* Physical training without arms should be carried out during the earlier period of training; later, physical training with arms

<sup>\*</sup> Cancelled at home in A. O., dated 1st August 1908, but not yet in India.

when he has acquired the capability of running 600 or 800 yards without exhibiting signs of distress, the recruit should be frequently exercised over the obstacle course with his rifle and wearing boots and at a rapid pace.

All other exercises should be in running kit, and should partake

as little as possible of the nature of a parade.

Apparatus work should be reduced to a minimum, but all recruit exercises on the horse, jumping from a height with a rifle, and rope climbing (also with rifle) should be practised, as tending to produce that activity which is so necessary.

Work should be done as much as possible in the open. It hardens a man, diminishes his liability to colds and chills, and

improves his appetite, and nutrition.

Working with many others in a cramped covered building is injurious to the lungs and the advantages of carrying out physical training in fresh air cannot be over-estimated and ought to be frequently impressed upon all.

Instruction in bayonet fighting must not be forgotten and should

be included in the course.

The method of instruction is laid down in instruction in bayonet fighting and great attention should be paid to the "practical use of the bayonet" at the end of the book.

During physical training without arms, or in fact in all exercises it should be remembered that leg and arm exercises should be

alternate.

This allows the muscles already worked, to receive the necessary rest before commencing more work and ensures a general exercise of the body and not of one particular muscle or group of muscles; further in combined exercises a period of rest should be given, during which time an explanation of the next exercise with the advantages accruing from it can well be given and all combined exercises, whether with or without arms, must be explained in such a manner that they are thoroughly understood by the recruit, and his interest thus aroused.

This is the work of the instructors, who have been specially trained and who moreover should be present at all physical training

to assist by their theoretical knowledge.

The instructors must display great patience and must remember that each man is not capable of doing the same amount of work and their whole attention must be directed to their squads, by which means alone will the squads be brought to concentrate their attention on the work in hand.

Squads of more than 12 men are inadvisable for this reason.

In all exercises it is essential to gain the interest of the men.

It is inadmissible to keep men in awkward positions while an instructor displays his knowledge of the book, and yet how often is this noticeable. This tires the men and their interest must flag and a distaste for the work will be instilled in them, which is exactly what is not required.



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course, his heart and lungs are in a fitter state for work and consequently his training can be more advanced and less progressive and

must be practically continuous throughout the year.

He has been taught to march, run, jump, surmount obstacles and the use of his weapon, and it merely remains to ensure that he keeps proficient in these qualifications. This can only be arrived at by constant practice, and to keep him fit, a certain amount of exercise daily is necessary.

Bayonet fighting, physical drill with and without arms, jumping high and long, and vaulting, would appear suitable for the summer months, as they can all be carried out in the shade and in the open

air, which is so essential to the general health of the men.

To this may be added simple work on the apparatus in the gymnasium, such as the horse, jumping from a height with a rifle and rope climbing (also with rifle).

Marching, running and obstacle course can be undertaken in

the cold season, or in the early morning during the summer.

These are merely suggestions as so much in India depends

on the station in which the unit is quartered.

As regards running, I would again draw attention to the fact that in the field, a slow double is unsuitable in very many cases, and therefore it appears necessary that men should be frequently practised at sprinting say 50 to 80 yards, which will accustom them to make short rushes over that distance and moreover develop their quickness.

To encourage jumping each company could have a long jump and high jump constructed outside the bungalow at a very little expense, and this would offer an inducement to the men of keeping fit and would moreover afford a new kind of recreation which would probably be acceptable to many men, who are not good enough to

play in the regimental or company team.

Bayonet fighting must be practised; the reasons I have already

explained.

One more point must be remembered, i.e., when working in the open air, at physical drill without arms, circles of at least 18 yards in diameter should be marked, and all opening and closing, when once learnt should be done on the move.

The saving of time by doing so is very great. Without repeating in detail all the points previously mentioned, I will recall a few only which apply equally to all physical training.

### PROMINENT AMONG THEM ARE

- (a) The necessity for keeping the object of the training in view, i.e., to make a man active and agile, possessed of stamina, capable of marching and of surmounting obstacles and ascending or descending hills rapidly when fully equipped, and make him efficient in the use of his weapon: in short all training must be for War.
  - (b) Reasons for reducing apparatus work to a minimum.
  - (c) Proper supervision and careful instruction and attention,



(d) The necessity for arousing the interest of the men in physical training.

(e) The necessity for the exercise of great patience by in-

structors.

(f) Advantage of working in the open air.

(g) Necessity for working in running kit; all work should partake as little as possible of the nature of a parade.

(h) The object of working leg and arms exercises alternately.(i) The inadvisability of keeping men in awkward positions

while the instructor displays his knowledge of the book.

(j) The advantage of encouraging boxing, games, bayonet

fighting, etc.

If these points are carefully noted and carried out, I think the result will show a great improvement in physical training and general health and fitness.

### SPECIAL CLASSES.

Before concluding, I would like to point out the necessity for selecting more suitable N.-C. Os. for the special classes at the Central Gymnasium.

Many regiments send private soldiers promoted L. Corporals or L. Naiks for the occasion, their only qualification being that they are "strong men." It must be remembered that these men have a great deal to learn before they are fit for instructors, and further they have to impart their knowledge to others: men who have just been private soldiers have to stand in front of squads and drill and instruct; further they have to doliver lectures on points they probably have never heard of before, such as the effect of exercise on the organs of the body, the muscles and their uses, the proper nourishment to be taken when training, and similar subjects.

It is hard on these N.-C. Os. themselves, and as they require to be exceptionally intelligent, it is a matter of great difficulty to their

instructors to train them in the time available.

The greatest care therefore should be taken in the selection of

officers and N.-C. Os. for these special classes.

They should be thoroughly grounded in the work before they are sent for this purpose and classes of officers and N.-C. Os. should always be held in a Regiment or Battalion, under instructors who have recently obtained certificates.

The Officers and N.-C. Os. selected should be keen on exercise, intelligent, good instructors or likely to become so, good at games, running, etc., and should, in the case of N.-C. Os. except in very exceptional cases, have been N.-C. Os. for some months before being

sent to the Central Gymnasia.

Should, in future, such selections be more carefully made and the above suggestions be adopted, it will result in a far higher standard of physical training being attained, as it must be remembered that the standard of physical efficiency to which a Battalion or Regiment attains, depends to a great extent on the instructors.

The latter should be present whenever physical training is taking place, and should give lectures on physical training to their comrades in a company, and should teach other uncertificated N.-C. Os. the points they themselves have lately learnt on their course.

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### RECONNAISSANCE AND SKETCHING.

# By Major A. H. D. Riach, R.E.

# Lecture delivered at Ahmadnagar on 28th June 1908.

"A commander without information is like a man blindfolded; he knows neither where to strike, nor from what quarter to expect attack."

"The acquisition of accurate information is one of the most

difficult tasks of a commander in the field."

"Unless he can pierce the fog that surrounds his adversary, he will be unable to devise a scheme either to compass that adversary's overthrow, or to ensure his own safety."

"Reconnaissance is usually understood to mean the acquisition of information about an enemy, or about a country, by

personal observation."

"It is by means of reconnaissance chiefly that a commander endeavours to ascertain the numbers, disposition and movements of his enemy, and to obtain such detailed information about the theatre of operations as may be necessary to supplement the maps at his disposal."

The foregoing are extracted from "Art of Reconnaissance" by

Colonel Henderson.

Now information about ground can be best conveyed, and, in many cases, only conveyed, by means of sketches, and the inability on the part of a scout, or the officer commanding a patrol, to produce an intelligible sketch, may prevent some most valuable information gained by him from being understood and made use of by the commander. No skill in word painting can make up for ignorance in this most useful branch of military training. It is therefore the duty of every soldier, who can read and write, and understand a map, to pick up the rudiments of this art.

This does not mean that everyone should be able to produce an accurate and neatly executed man or a picturesque sketch. To

again quote :--

"Mapping which is frankly inaccurate, and pretends only to give, in reasonable proportion the main features of a district, can nearly always be carried out, and is often of great value. Maps drawn roughly by eye with perhaps a few compass bearings as guides, or maps sketched in from memory, after the ground has been crossed and observed, may, and often do, present exactly the information which is required."

To prepare such a sketch is within the capacity of anyone who has read the elements of field sketching. It is merely a matter of practice, of eye, of appreciating the features of the ground it is

necessary to put on to paper, and of hand in being able to draw a reasonably firm line. Anyone can learn to do it, but it is harder for the man who has not inherited the knack of using his pencil. My object is to show what may be done by an inferior draftsman, and the great utility, in certain circumstances, of even a poorly executed

plan or panorama.

To have had a sound training in field sketching is a great help, but the means employed to produce a sketch which will win a star in "D" can seldom be fully made use of in the face of the enemy. Pacing, contouring, taking slopes with the clinometer and filling in detail in a triangulation made with the plane-table or compass, are generally out of the question. These are the methods by which one learns, and they bear the same relation to the reconnaissance of an enemy's position, as the exercises learnt in the barrack square do to the attack on that position. Just as without the preliminary drill which has taught us to march and turn, to close and extend, as matters of habit, the best of material will be of little use in the rush and excitement of attack, so in the same way, without the habit of seeing, noting, measuring and putting on paper, slopes, angles, and features of ground, the best artist in the world will often fail to produce a reconnaissance sketch which will be of value to the commander of an attacking force.

What is required in reconnaissance is, first, to notice the things which will be of use, and, secondly, to make the facts learnt available. If to do this requires that a sketch be prepared (and this will usually be the case in an attack), then that sketch should embody just what

is wanted, and no more.

It should be the best possible "fudge" which can be made in the time available; and the time available is, generally, the shortest

possible time.

Now to execute a "fudge" one naturally makes use of any means at hand to help. Such means, in the case in point, usually exist in the form of maps of some sort. The task then is often to verify and add to the details on the map, so as to give the commander definite knowledge as to the accessibility of his objective, and the routes available.

If you have a map, use it fully, if not do the best you can to supply the want.

The most usual maps available are small scale ones and to add

the essential detail they have to be enlarged.

The best way to show what can be done is to give actual examples:—Sketch 4 was executed during a Staff Ride by the officer detailed to lead the night attack it was intended to make on the enemy's position. It represents a reconnaissance of the position, and took three hours in the field (mounted) after one hour preliminary work (enlarging), and ½ hour for finishing up, after return to camp. It covers about 12 square miles of previously unknown country, and was sketched by riding along the front of the position at a range of 2,000 to 3,000 yards.

It is by no means a sample of a perfect sketch artistically, but serves as an instance of the sort of work that just about meets the needs of the case, by showing where the enemy is expected to be, and how to get at him.

Had the sketch been started with a clean slate, it could not have been possible to cover nearly as much ground, or to do that

lesser amount as usefully.

I have dismal recollections of the topographical sketches one had to execute as a cadet, pacing solemnly along a road, marking the direction of every fence, the size and exact position of the pigsty (with a note "pigs invisible, probably 2 or more"), and other details of equal value. A rate of progression of a mile an hour was good, and if after a hard morning's work one had gone round the sides of a square mile of country, one had done well, even though prominent features, of tactical importance, lying close to the route, had been put in in a most shadowy manner, because time had not sufficed to take accurate shots at them in the way laid down in the text-books.

The futility of much of this work, and the false ideal it set up, has at last been recognised—vide "General remarks" in "The

Manual of Map Reading and Field Sketching."

2. "A military map or field sketch should show all the features of, or in, a country, natural and artificial, which are of importance from a military point of view, i.e., those which might affect the dispositions, movements, security, or supply of troops. A military map is the proper work of a trained surveyor, using special instruments and elaborate methods, with unlimited time at his disposal, and aiming at minute accuracy. A field sketch is a sketch of ground such as any officer or non-commissioned officer, of average attainments, ought to be able to make, working with such instruments and under such conditions regarding time, weather, etc., as generally exist in the field. Therefore, while every effort should be made to be as accurate as time and the means available will permit, that minute accuracy which is required by the surveyor in the production of his map is not expected, and should not be attempted."

For field sketching, as opposed to mapping or surveying, rapidity is essential, and with it intelligibility, clearness and simplicity; accuracy is a minor consideration. It is all a matter of judgment,

plus previous training.

As I have said, a sketch should be the best "fudge" that can be made under the circumstances. I qualify this by adding that it must never be a "fake."

Everything on the sketch should exist, and if some important detail has been sketched in approximately, by eye, a note to that effect

should be added.

Instruments are of assistance only so far as they will help to produce the result aimed at. A ruled line is unnecessary when you can draw a sufficiently straight one free hand. A measured angle is needed only when you require the point observed as a "Ruling point" to form the framework on which you have to build up your



sketch. In short, use your instruments as you should use an orderly and don't make work for them.

To return to our examples, and the means of producing a reasonably correct sketch in limited time, under possible fire, and with but little in the way of appliances:—

Sketch 1 explains itself. It was produced from the pocket handkerchief map and is an enlargement made on squared paper, such as one has in the Service note book, Army Book 153.\*

What we need are -- board or card to sketch on, paper, pencil,

knife, rubber, compass, straightedge, and perhaps chalks.

The framework should be built up in the following order:—Roads and ruling points such as hills, villages, water-courses, and lastly form lines.

Using squared paper enlargements, sketches can be done in sec-

tions and joined together.

Sketch 2 is the finished product not very highly polished, but something like what could be done under the conditions. The route followed is marked in red, and practically every line on the sketch (except a few tracks) can be seen from this route. It lies for a great part out of sight of the enemy and is almost entirely out of rifle range.

Note differences between 1 and 2 such as correction of position of Shahpur village, addition of East Ridge Barracks, etc., and extra

form lines.

On reaching A, sketch 3 was roughed in, and finished up after return.

It is popularly considered that to draw a landscape sketch is beyond the capacity of any one, not an artist, without long and weari-

some training. This is not so.

Many books give useful hints as to how to proceed. The frame, recommended in "The Active Service Pocket Book," is likely to be an assistance to the learner. "The Manual of Map Reading, etc.," devotes a chapter to the subject, and gives examples, but they rather frighten the beginner by their excellence. Read the instructions and try for yourself.

Personally, I recommend the following procedure for a "stiff

'un" with the pencil:-

1. Decide what you want to draw, and from what point.

2. Decide length of panorama.

3. Select prominent distant points, such as hill-tops, villages, etc., etc.

4. Estimate roughly (or measure) total angle included, and

angles between each pair of prominent points.

5. Using squared paper, select on it the number of squares you wish to represent the above angles, and tick them off. (In sketch 3 one large square of 11 represents 10°, and the sketch includes about 80°. Taking the nek as the centre, the tomb is 10° left, and

<sup>•</sup> Note.—The "Memo" on the title-page of this book and the note on page 66 the "Manual of Map Reading, etc.," as to the size of these squares are both incorrect

One Tree Hill 5° right. Peak B is 14° left of tomb, peak C 15° left of B.)

6. Next decide maximum height of sketch, angularly, from highest peak to nearest point of foreground it is intended to show, and also vertical angles of one point above another, and tick these off on the squared paper.

7. In this way, starting with sky line, or else the most prominent line you wish to depict, jot in the lesser features in their

proper positions, and, so far as you can, at the proper size.

8. Unless the foreground is of tactical interest (it seldom is?), leave it out. Also shading, unless you mean something by it, and are able to do it fairly well. Show forests and trees, ridges and spurs, lines of roads, etc., as well as you can.

9. Label the prominent important points, and, if you can, take

or estimate, ranges to them, and note on sketch.

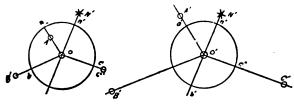
10. Don't exaggerate hills too much, but clearly show all important villages, knolls, etc., even if not really very conspicuous. Show courses of nullahs, as far as possible, by labels.

11. Fake in nothing.

12. If you have a plan, the panorama should be referred to it, and the point whence taken marked on it. If not, give a rough

plan diagram to show where you sat, and put a North point.

If you have no squared paper, or your map itself is not marked off in squares, then, instead of drawing them, a more rapid method of making on enlargement, or a copy, is as follows:—Suppose the enlargement is from 1" to one mile to 2" to one mile, then on the plan describe a circle somewhere in the middle of the piece to be enlarged, and from its centre O draw rays to the prominent points, as A, B, C, and another ray to mark the direction of the north point N.



These rays cut the circle at a, b, c and n respectively. On the blank paper describe a similar circle, and draw the north point N', cutting the circle at n'. Measure n a and lay off n' a' on the other circle. Similarly make a' b' and b' c' equal to ab and bc respectively.

Draw rays through a' b' and c' from centre o'. Set off O'A' along o'a and make it equal to twice OA. Similarly make O'B' and

o'c equal to twice OB and oc respectively.

The points A' B' C' will then be plotted correctly on the enlargement, and the intermediate detail can be filled in by eye, as when using squared paper.



This takes a lot of description, but in practice it can be done very quickly, and is simple and accurate. If no compasses are available, draw the circles by making two holes in a card. Put a pin in one as the centre and describe the circles with a pencil point in the other hole. Use the edge of the card to measure and lay off the necessary lengths.

The best time to see a landscape is when the sun is shining

across it, and is not directly behind your object or yourself.

Like the plan, the preliminary work of the landscape sketch may be done beforehand. The drawing of panorama sketches from the map alone, as now taught, must bear the same relation to

a sketch drawn on the ground, as plan 1 does to plan 2.

The measuring of angles has been referred to, but to do this with a compass may take too long, except for the preliminary skeleton of the plan. Now, if the distance to the eye from an object held in the fingers with the arm extended is  $28\frac{1}{2}$ , (as is the case with many people), then a ruler graduated in inches will cover 2° per inch, if so held out, and viewed with one eye. A four-fold, one-foot rule is easily carried, and can conveniently be used in this way. Opened to 6" it will subtend 12°; to 12", 24°; angles, vertical and horizontal, can thus be quickly estimated. Each individual should test this for himself, and see what correction is necessary.

The span of the open hand, with arm extended, covers from 16° to 19, the palm 6° or 7°, one finger 1° to 2°, and so on.

These should be tried and learnt.

The angle viewed without moving the eyes is roughly 60°.

As regards scale for plans 2° to 1 mile is convenient for open,

and 3" to 4" per mile for close country is useful.

Note north point always. Finishing up in ink is often better than pencil. Printing, as on sketches 1 and 2 with long-tailed letters is recommended, as it is easier to make this look straight and even:—CALCUTTA, MADRAS.

If you have no instruments, make an eye sketch; if no map then try and get some framework, and a base to work on. Pace, use milestones, or telegraph posts or take range with range-finder.

A plan sketch made from one point with a range-finder and a compass, with intermediate detail filled in by eye, may be exceed-

ingly useful.

Having discussed the means of making plans and sketches, it may be asked "cui bono?" Is the advantage to be gained ever worth the trouble, on active service? Will not a simple freehand

diagram be sufficient, and easier to understand?

I reply with a question: "If you were called on to attack the position delineated in sketches 2 and 3, not having seen the ground, what course of action would appear to you likely to be suitable?" The obvious answer is "hold the enemy in front, and turn his left flank." Now as no battle is known to have been fought over this ground, and as an ounce of practice is worth pounds of theory, let us take examples from history. Our sketches serve very well to illustrate a piece of ground which was much in our minds a few years ago.

The numbers in the following extracts refer to the numbers in circles and letters on sketch 3.

See skeleton key, sketch 5, and note direction of N. point. Extract from orders by Lieutenant-General Sir Francis Clery, K.C.B., Commanding South Natal Field Force:—

### CHIEVELY:

14th December 1899, 10 P.M.

1. The enemy is entrenched in the Kopjes north of Colenso Bridge. One large camp is reported to be near the Ladysmith Road about 5 miles N. W. of Colenso. Another large camp is reported in the hills which lie north of the Tugela, in a northerly direction from Hlangwhane Hill.

2. It is the intention of the G.O.C. to force the passage of

the Tugela to-morrow.

3. The 5th Brigade will move from its present camping ground at 4-30 A.M. and march towards the Bridle Drift, immediately west of the junction of Doornkop Sprint and the Tugela. The Brigade will cross at this point, and after crossing move along the left bank of the river towards the Kopjes north of the Iron Bridge.

General Hart, Commanding the 5th Brigade, had been provided with a tracing of a map, a Kaffir guide and an interpreter to assist him to find the "Bridle Drift."

The map was a plane table sketch prepared shortly before the action, an attempt to fill into a farm survey, made for land registration, as many of the topographical features as could be seen from a distance. It had not been verified by close reconnaissance of the river and both the sketch and the orders were misleading. The sketch was defective in three particulars; it showed the Spruit as running into the Tugela at the west bend of the loop, the Bridle Drift close to the junction of the Spruit, and also another loop of the river, west of the drift.\*

Hart's Brigade of Irishmen were led straight into the loop, fought their way up it with loss; found no drift, (though it afterwards transpired that there were two available) and after some hours were recalled and fell back, growling and unbeaten, ready to go for the enemy again if they could.

The attack on the Iron Bridge was mown down, Long's guns, unable to get fresh supplies of ammunition, were finally abandoned, the attack round to the right was recalled, and the battle of Colenso

was lost.

Does this not show the usefulness of efficient reconnaissance sketches? It may be said the disaster was entirely due to the lack of such. We are told that Sir Redvers Buller was for some time under the impression that the Tugela ran to the south of Hlang-whane (i.e., along the line of the Gomba Stream), and that this misunderstanding modified his whole course of action.

<sup>&</sup>quot; "Official History of the War in S. Africa, 1899-02," Vol. I.



It is as though the officer who filled in sketch 2 had failed push forward as far as the route shown on the plan, and knowing a deep river flowed across his front, had shown it quite incorrect at F, and also as following the line of the nullah from Shahpur, pa Sarpola Hadi.

The utility of the panorama sketch again is well illustrated the sketch 6, which was executed by two R. A. officers, with a ranginder and shows the true position of Hlangwhane, relatively

the river.

After Colenso, which was fought on 15th December 189 came the Acton Homes Spionkop, Vaal Krantz Campaign, and was not till the middle of February 1900 that Buller decided to

via Hlangwhane.

Here again he was hampered, and lost time, for want of prop reconnaissance sketches. The official history, referring to the series of actions,\* says that Sir Redvers Buller either gave verb instructions to his generals, or supplemented written orders by or explanation. This was on account of the difficulty of describing writing the features of this hilly country. It had been surveye but solely with a view to settling the boundaries of farms, and the map hurriedly compiled from these farm surveys often misrepresent or wholly ignored the military features of the ground. Great effor had been made to correct the defects, but the only information obtainable was not that of soldiers trained to study country from a professional standpoint. The map, though far better than nor at all, was frequently very misleading.

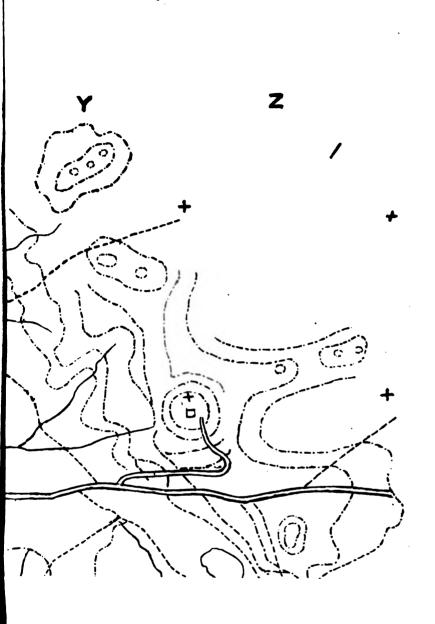
The difficulty was increased by the absence of landmarks, by

which the ground could be described.

Moving from Chieveley (1), via Gun Hill, Buller reoccupie Hussar Hill (7). Thence he reconnoitred Green Hill (6) and i succession captured this hill, Cingolo Mountain (4), Monte Christ (5) and Hlangwhane (3). Pushing on to Naval Hill (one Tree Hill on sketch 2) he bridged the river and fought his way to Ladysmith.

One more remark:—It is often our duty to check the surver maps of large tracts of country, and this is a task imposed with the definite object of ensuring that these maps will not play a commander false, as Buller's maps did. Bearing this object in mind and regarding the work as an exercise in reading ground, as soldier is required to do, tactically and strategically, the irksomeness will be at least decreased. If in addition we look on the result of our labour as a record, the falsity or inaccuracy of which may lead to loss or disaster in actual warfare (it is conceivable that officers were employed in peace time verifying plans of Natal), we shall then be willing to put our best into the performance and carry it out with interest.

<sup>&</sup>quot; Vo!. II, p. 435.





Unaccustomed movements in gymnastic postures are not solt-

Physiological principles of Physical Training by M S Pambrey

able, for they produce an amount of the are and expenditure of nervous and message energy, which are disproportionate to the work done.

Marching without a food is therefore suggested as a sample exercise to commence with

Again in order to improve his wind, the incruit must ressiinstruction in running.

By the word wind is meant the capacity of the heart a lungs to accommodate themselves to the demands made upon this by muscular work.

Without going deeply into the subject I would point out that the running must be carried out under a certain amount of sevent so principle and the recruit should be frequently medically examined.

It is a fact that men with defective heart action can be pra-

eally cured by running scientifically carried out.

The principle therefore under which instruction in run; \(\tau\_2\) should be taught is that of progression, and great cars most to taken and proper supervision exercised during this portion of the recruits training.

In employing the word "training. I mean the training of the heart and if the heart of a hearthy man becomes weak or disorstrong

it is probable that the training has been but

It is wrong to run a recruit for to or 7 in in ries at the calmenes ment of his training and yet his often is the deno and lever for longer periods. had a minute run and then one minute rose a anow the heart to recover its normal state is self-ent then a for a run of had a minute and a further rest of a minute, after each run rose recruit should be care for your spected and if any man shows greasegme of distress such as laborous breathing twitching of the rosigning or shortness of breath he should be examined (contact at one).

From this on the training should be prigression are the contion of rin should be greatedly increased and the period for a decreased.

During the latter part in of the instruction specified in the yards should be produced the shock of this was nonly graphs as to train the soller for makes many defined in the project.

Ranting should be to immensed unitally a respect to the entire that in the trust in the hardson in the tracing for account the weeks. This refers to recognize a to the horizon area.

In motor control maner of and on norgether secretaries the take a pumping high and engages of organish to the horizon and the corresponding of states.

\*Physical training with it amos should be carried and disagrate corner period of training. Note that is not training with an o

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when he has acquired the capability of running 600 or 800 yards without exhibiting signs of distress, the recruit should be frequently exercised over the obstacle course with his rifle and wearing boots and at a rapid pace.

All other exercises should be in running kit, and should partake

as little as possible of the nature of a parade.

Apparatus work should be reduced to a minimum, but all recruit exercises on the horse, jumping from a height with a rifle, and rope climbing (also with rifle) should be practised, as tending to produce that activity which is so necessary.

Work should be done as much as possible in the open. It hardens a man, diminishes his liability to colds and chills, and

improves his appetite, and nutrition.

Working with many others in a cramped covered building is injurious to the lungs and the advantages of carrying out physical training in fresh air cannot be over estimated and ought to be frequently impressed upon all.

Instruction in bayonet fighting must not be forgotten and should

be included in the course.

The method of instruction is laid down in instruction in bayonet fighting and great attention should be paid to the "practical use of the bayonet" at the end of the book.

During physical training without arms, or in fact in all exercises it should be remembered that leg and arm exercises should be alternate.

This allows the muscles already worked, to receive the necessary rest before commencing more work and ensures a general exercise of the body and not of one particular muscle or group of muscles; further in combined exercises a period of rest should be given, during which time an explanation of the next exercise with the advantages accruing from it can well be given and all combined exercises, whether with or without arms, must be explained in such a manner that they are thoroughly understood by the recruit, and his interest thus aroused.

This is the work of the instructors, who have been specially trained and who moreover should be present at all physical training

to assist by their theoretical knowledge.

The instructors must display great patience and must remember that each man is not capable of doing the same amount of work and their whole attention must be directed to their squads, by which means alone will the squads be brought to concentrate their attention on the work in hand.

Squads of more than 12 men are inadvisable for this reason.

In all exercises it is essential to gain the interest of the men.

It is inadmissible to keep men in awkward positions while an instructor displays his knowledge of the book, and yet how often is this noticeable. This tires the men and their interest must flag and a distaste for the work will be instilled in them, which is exactly what is not required.

In the jumping, vaulting, etc., a spirit of emulation should be

encouraged, by which far better results will be obtained.

As tending to increase general activity, fitness and stamina, the recruit should be encouraged, as much as possible, to take part in games, boxing, bayonet fighting, etc. These will occupy his time and moreover teach a man to act upon his own initiative and in many cases give excellent training to the eye and brain.

To sum up, the training of the recruit must be progressive, and owing to his undeveloped physical condition in the majority of cases

must be conducted on scientific principles.

From the commencement his interests must be aroused and his work made pleasant, constant watching and attention is required, the work should partake as little as possible of the nature of a parade and the object of the training should never be lost sight of, i.e., to increase the recruit's strength, agility, power of endurance and capacity for muscular work and not to teach him to become a "strong man."

This object can be attained by following the principles above suggested, and it will be found that if the necessary care and supervision be exercised great progress in the general health and fitness

of a battalion or regiment will be the result.

We now come to the training of the trained soldier; fifteen days is the period laid down by regulation for the annual physical training of the soldier in the British service and having passed through this training, it is often assumed that the soldier

needs no further instruction until the following year.

On the contrary, the soldier must be always physically "fit" to go on service and therefore his training must be practically continuous.

Of course with a man as with a horse, it is impossible to keep him in continual training, but the period spent on musketry, etc., allows the soldier that rest from physical exertion which is essential; further a large number of men avail themselves of the furlough privilege and during this period they are not working and conse-

quently are resting their muscles and repairing waste.

The fifteen days' course is merely to ensure that the soldier receives at least this amount of physical training, and it is during this training that the Regimental Instructors, who should be up to the latest system of training, can instruct the companies in all the latest details and assist the company officers in the training, as they themselves have undergone a special course and are consequently highly trained and understand the scientific principles required in the training.

I have already enumerated the qualifications necessary to make an efficient soldier from a physical point of view and explained the

necessity of each qualification.

The training of the trained soldier differs only from that of the recruit, inasmuch that the older soldier has passed through his recruit's

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course, his heart and lungs are in a fitter state for work and consequently his training can be more advanced and less progressive and

must be practically continuous throughout the year.

He has been taught to march, run, jump, surmount obstacles and the use of his weapon, and it merely remains to ensure that he keeps proficient in these qualifications. This can only be arrived at by constant practice, and to keep him fit, a certain amount of exercise daily is necessary.

Bayonet fighting, physical drill with and without arms, jumping high and long, and vaulting, would appear suitable for the summer months, as they can all be carried out in the shade and in the open

air, which is so essential to the general health of the men.

To this may be added simple work on the apparatus in the gymnasium, such as the horse, jumping from a height with a rifle and rope climbing (also with rifle).

Marching, running and obstacle course can be undertaken in

the cold season, or in the early morning during the summer.

These are merely suggestions as so much in India depends

on the station in which the unit is quartered.

As regards running, I would again draw attention to the fact that in the field, a slow double is unsuitable in very many cases, and therefore it appears necessary that men should be frequently practised at sprinting say 50 to 80 yards, which will accustom them to make short rushes over that distance and moreover develop their quickness.

To encourage jumping each company could have a long jump and high jump constructed outside the bungalow at a very little expense, and this would offer an inducement to the men of keeping fit and would moreover afford a new kind of recreation which would probably be acceptable to many men, who are not good enough to

play in the regimental or company team.

Bayonet fighting must be practised; the reasons I have already

explained.

One more point must be remembered, i.e., when working in the open air, at physical drill without arms, circles of at least 18 yards in diameter should be marked, and all opening and closing, when once learnt should be done on the move.

The saving of time by doing so is very great. Without repeating in detail all the points previously mentioned, I will recall a few only which apply equally to all physical training.

#### PROMINENT AMONG THEM ARE

- (a) The necessity for keeping the object of the training in view, i.e., to make a man active and agile, possessed of stamina, capable of marching and of surmounting obstacles and ascending or descending hills rapidly when fully equipped, and make him efficient in the use of his weapon: in short all training must be for War.
  - (b) Reasons for reducing apparatus work to a minimum.(c) Proper supervision and careful instruction and attention.

(d) The necessity for arousing the interest of the men in physical training.

(e) The necessity for the exercise of great patience by in-

structors.

(f) Advantage of working in the open air.

(g) Necessity for working in running kit; all work should partake as little as possible of the nature of a parade.

(h) The object of working leg and arms exercises alternately.

(i) The inadvisability of keeping men in awkward positions while the instructor displays his knowledge of the book.

(j) The advantage of encouraging boxing, games, bayonet

fighting, etc.

If these points are carefully noted and carried out, I think the result will show a great improvement in physical training and general health and fitness.

#### SPECIAL CLASSES.

Before concluding, I would like to point out the necessity for selecting more suitable N.-C. Os. for the special classes at the

Central Gymnasium.

Many regiments send private soldiers promoted L. Corporals or L. Naiks for the occasion, their only qualification being that they are "strong men." It must be remembered that these men have a great deal to learn before they are fit for instructors, and further they have to impart their knowledge to others: men who have just been private soldiers have to stand in front of squads and drill and instruct; further they have to deliver lectures on points they probably have never heard of before, such as the effect of exercise on the organs of the body, the muscles and their uses, the proper nourishment to be taken when training, and similar subjects.

It is hard on these N.-C. Os. themselves, and as they require to be exceptionally intelligent, it is a matter of great difficulty to their

instructors to train them in the time available.

The greatest care therefore should be taken in the selection of

officers and N.-C. Os. for these special classes.

They should be thoroughly grounded in the work before they are sent for this purpose and classes of officers and N.-C. Os. should always be held in a Regiment or Battalion, under instructors who have recently obtained certificates.

The Officers and N.-C. Os. selected should be keen on exercise, intelligent, good instructors or likely to become so, good at games, running, etc., and should, in the case of N.-C. Os. except in very exceptional cases, have been N.-C. Os. for some months before being

sent to the Central Gymnasia.

Should, in future, such selections be more carefully made and the above suggestions be adopted, it will result in a far higher standard of physical training being attained, as it must be remembered that the standard of physical efficiency to which a Battalion or Regiment attains, depends to a great extent on the instructors.

The latter should be present whenever physical training is taking place, and should give lectures on physical training to their comrades in a company, and should teach other uncertificated N.-C. Os. the points they themselves have lately learnt on their course.

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#### RECONNAISSANCE AND SKETCHING.

## By Major A. H. D. Riach, R.E.

## Lecture delivered at Ahmadnagar on 28th June 1908.

"A commander without information is like a man blindfolded; he knows neither where to strike, nor from what quarter to expect attack."

"The acquisition of accurate information is one of the most

difficult tasks of a commander in the field."

"Unless he can pierce the fog that surrounds his adversary, he will be unable to devise a scheme either to compass that adversary's overthrow, or to ensure his own safety."

"Reconnaissance is usually understood to mean the acquisition of information about an enemy, or about a country, by

personal observation."

"It is by means of reconnaissance chiefly that a commander endeavours to ascertain the numbers, disposition and movements of his enemy, and to obtain such detailed information about the theatre of operations as may be necessary to supplement the maps at his disposal."

The foregoing are extracted from "Art of Reconnaissance" by

Colonel Henderson.

Now information about ground can be best conveyed, and, in many cases, only conveyed, by means of sketches, and the inability on the part of a scout, or the officer commanding a patrol, to produce an intelligible sketch, may prevent some most valuable information gained by him from being understood and made use of by the commander. No skill in word painting can make up for ignorance in this most useful branch of military training. It is therefore the duty of every soldier, who can read and write, and understand a map, to pick up the rudiments of this art.

This does not mean that everyone should be able to produce an accurate and neatly executed map or a picturesque sketch. To

again quote:--

"Mapping which is frankly inaccurate, and pretends only to give, in reasonable proportion the main features of a district, can nearly always be carried out, and is often of great value. Maps drawn roughly by eye with perhaps a few compass bearings as guides, or maps sketched in from memory, after the ground has been crossed and observed, may, and often do, present exactly the information which is required."

To prepare such a sketch is within the capacity of anyone who has read the elements of field sketching. It is merely a matter of practice, of eye, of appreciating the features of the ground it is

necessary to put on to paper, and of hand in being able to draw a reasonably firm line. Anyone can learn to do it, but it is harder for the man who has not inherited the knack of using his pencil. My object is to show what may be done by an inferior draftsman, and the great utility, in certain circumstances, of even a poorly executed

plan or panorama.

To have had a sound training in field sketching is a great help, but the means employed to produce a sketch which will win a star in "D" can seldom be fully made use of in the face of the enemy. Pacing, contouring, taking slopes with the clinometer and filling in detail in a triangulation made with the plane-table or compass, are generally out of the question. These are the methods by which one learns, and they bear the same relation to the reconnaissance of an enemy's position, as the exercises learnt in the barrack square do to the attack on that position. Just as without the preliminary drill which has taught us to march and turn, to close and extend, as matters of habit, the best of material will be of little use in the rush and excitement of attack, so in the same way, without the habit of seeing, noting, measuring and putting on paper, slopes, angles, and features of ground, the best artist in the world will often fail to produce a reconnaissance sketch which will be of value to the commander of an attacking force.

What is required in reconnaissance is, first, to notice the things which will be of use, and, secondly, to make the facts learnt available. If to do this requires that a sketch be prepared (and this will usually be the case in an attack), then that sketch should embody just what

is wanted, and no more.

It should be the best possible "fudge" which can be made in the time available; and the time available is, generally, the shortest

possible time.

Now to execute a "fudge" one naturally makes use of any means at hand to help. Such means, in the case in point, usually exist in the form of maps of some sort. The task then is often to verify and add to the details on the map, so as to give the commander definite knowledge as to the accessibility of his objective, and the routes available.

If you have a map, use it fully, if not do the best you can to supply the want.

The most usual maps available are small scale ones and to add

the essential detail they have to be enlarged.

The best way to show what can be done is to give actual examples:—Sketch 4 was executed during a Staff Ride by the officer detailed to lead the night attack it was intended to make on the enemy's position. It represents a reconnaissance of the position, and took three hours in the field (mounted) after one hour preliminary work (enlarging), and ½ hour for finishing up, after return to camp. It covers about 12 square miles of previously unknown country, and was sketched by riding along the front of the position at a range of 2,000 to 3,000 yards.

It is by no means a sample of a perfect sketch artistically, but serves as an instance of the sort of work that just about meets the needs of the case, by showing where the enemy is expected to be, and how to get at him.

Had the sketch been started with a clean slate, it could not have been possible to cover nearly as much ground, or to do that

lesser amount as usefully.

I have dismal recollections of the topographical sketches one had to execute as a cadet, pacing solemnly along a road, marking the direction of every fence, the size and exact position of the pigsty (with a note "pigs invisible, probably 2 or more"), and other details of equal value. A rate of progression of a mile an hour was good, and if after a hard morning's work one had gone round the sides of a square mile of country, one had done well, even though prominent features, of tactical importance, lying close to the route, had been put in in a most shadowy manner, because time had not sufficed to take accurate shots at them in the way laid down in the text-books.

The futility of much of this work, and the false ideal it set up, has at last been recognised—vide "General remarks" in "The

Manual of Map Reading and Field Sketching."

2. "A military map or field sketch should show all the features of, or in, a country, natural and artificial, which are of importance from a military point of view, i.e., those which might affect the dispositions, movements, security, or supply of troops. A military map is the proper work of a trained surveyor, using special instruments and elaborate methods, with unlimited time at his disposal, and aiming at minute accuracy. A field sketch is a sketch of ground such as any officer or non-commissioned officer, of average attainments, ought to be able to make, working with such instruments and under such conditions regarding time, weather, etc., as generally exist in the field. Therefore, while every effort should be made to be as accurate as time and the means available will permit, that minute accuracy which is required by the surveyor in the production of his map is not expected, and should not be attempted."

For field sketching, as opposed to mapping or surveying, rapidity is essential, and with it intelligibility, clearness and simplicity; accuracy is a minor consideration. It is all a matter of judgment,

plus previous training.

As I have said, a sketch should be the best "fudge" that can be made under the circumstances. I qualify this by adding that it must never be a "fake."

Everything on the sketch should exist, and if some important detail has been sketched in approximately, by eye, a note to that effect

should be added.

Instruments are of assistance only so far as they will help to produce the result aimed at. A ruled line is unnecessary when you can draw a sufficiently straight one free hand. A measured angle is needed only when you require the point observed as a "Ruling point" to form the framework on which you have to build up your

sketch. In short, use your instruments as you should use an orderly and don't make work for them.

To return to our examples, and the means of producing a reasonably correct sketch in limited time, under possible fire, and with but little in the way of appliances:—

Sketch I explains itself. It was produced from the pocket handkerchief map and is an enlargement made on squared paper, such as

one has in the Service note book, Army Book 153.\*

What we need are-board or card to sketch on, paper, pencil,

knife, rubber, compass, straightedge, and perhaps chalks.

The framework should be built up in the following order:—Roads and ruling points such as hills, villages, water-courses, and lastly form lines.

Using squared paper enlargements, sketches can be done in sec-

tions and joined together.

Sketch 2 is the finished product not very highly polished, but something like what could be done under the conditions. The route followed is marked in red, and practically every line on the sketch (except a few tracks) can be seen from this route. It lies for a great part out of sight of the enemy and is almost entirely out of rifle range.

Note differences between 1 and 2 such as correction of position of Shahpur village, addition of East Ridge Barracks, etc., and extra

form lines.

On reaching A, sketch 3 was roughed in, and finished up after return.

It is popularly considered that to draw a landscape sketch is beyond the capacity of any one, not an artist, without long and weari-

some training. This is not so.

Many books give useful hints as to how to proceed. The frame, recommended in "The Active Service Pocket Book," is likely to be an assistance to the learner. "The Manual of Map Reading, etc.," devotes a chapter to the subject, and gives examples, but they rather frighten the beginner by their excellence. Read the instructions and try for yourself.

Personally, I recommend the following procedure for a "stiff

'un" with the pencil:-

1. Decide what you want to draw, and from what point.

2. Decide length of panorama.

3. Select prominent distant points, such as hill-tops, villages, etc., etc.

4. Estimate roughly (or measure) total angle included, and

angles between each pair of prominent points.

5. Using squared paper, select on it the number of squares you wish to represent the above angles, and tick them off. (In sketch 3 one large square of 11 represents 10°, and the sketch includes about 80°. Taking the nek as the centre, the tomb is 10° left, and

<sup>\*</sup> Note.—The "Memo" on the title-page of this book and the note on page 66 the "Manual of Map Reading, etc.," as to the size of these squares are both incorrect.



One Tree Hill 5° right. Peak B is 14° left of tomb, peak C 15° left of B.)

6. Next decide maximum height of sketch, angularly, from highest peak to nearest point of foreground it is intended to show, and also vertical angles of one point above another, and tick these off on the squared paper.

7. In this way, starting with sky line, or else the most prominent line you wish to depict, jot in the lesser features in their

proper positions, and, so far as you can, at the proper size.

8. Unless the foreground is of tactical interest (it seldom is?), leave it out. Also shading, unless you mean something by it, and are able to do it fairly well. Show forests and trees, ridges and spurs, lines of roads, etc., as well as you can.

9. Label the prominent important points, and, if you can, take

or estimate, ranges to them, and note on sketch.

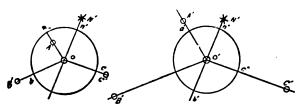
10. Don't exaggerate hills too much, but clearly show all important villages, knolls, etc., even if not really very conspicuous. Show courses of nullahs, as far as possible, by labels.

11. Fake in nothing.

12. If you have a plan, the panorama should be referred to it, and the point whence taken marked on it. If not, give a rough

plan deagram to show where you sat, and put a North point.

If you have no squared paper, or your map itself is not marked off in squares, then, instead of drawing them, a more rapid method of making on enlargement, or a copy, is as follows:—Suppose the enlargement is from 1" to one mile to 2" to one mile, then on the plan describe a circle somewhere in the middle of the piece to be enlarged, and from its centre O draw rays to the prominent points, as A, B, C, and another ray to mark the direction of the north point N.



These rays cut the circle at a, b, c and n respectively. On the blank paper describe a similar circle, and draw the north point N', cutting the circle at n'. Measure n a and lay off n' a' on the other circle. Similarly make a' b' and b' c' equal to ab and bc respectively.

Draw rays through a' b' and c' from centre o'. Set off O'A' along o'a and make it equal to twice OA. Similarly make O'B' and

o'c equal to twice OB and oc respectively.

'I'he points A' B' C' will then be plotted correctly on the enlargement, and the intermediate detail can be filled in by eye, as when using squared paper.

This takes a lot of description, but in practice it can be done very quickly, and is simple and accurate. If no compasses are available, draw the circles by making two holes in a card. Put a pin in one as the centre and describe the circles with a pencil point in the other hole. Use the edge of the card to measure and lay off the necessary lengths.

The best time to see a landscape is when the sun is shining

across it, and is not directly behind your object or yourself.

Like the plan, the preliminary work of the landscape sketch may be done beforehand. The drawing of panorama sketches from the map alone, as now taught, must bear the same relation to

a sketch drawn on the ground, as plan 1 does to plan 2.

The measuring of angles has been referred to, but to do this with a compass may take too long, except for the preliminary skeleton of the plan. Now, if the distance to the eye from an object held in the fingers with the arm extended is  $28\frac{1}{2}$ , (as is the case with many people), then a ruler graduated in inches will cover 2° per inch, if so held out, and viewed with one eye. A four-fold, one-foot rule is easily carried, and can conveniently be used in this way. Opened to 6" it will subtend 12°; to 12", 24°; angles, vertical and horizontal, can thus be quickly estimated. Each individual should test this for himself, and see what correction is necessary.

The span of the open hand, with arm extended, covers from 16° to 19, the palm 6° or 7°, one finger 1° to 2°, and so on.

These should be tried and learnt.

The angle viewed without moving the eyes is roughly 60°.

As regards scale for plans 2" to 1 mile is convenient for open,

and 3" to  $\bar{4}$ " per mile for close country is useful.

Note north point always. Finishing up in ink is often better than pencil. Printing, as on sketches 1 and 2 with long-tailed letters is recommended, as it is easier to make this look straight and even:—CALCUTTA, MADRAS.

If you have no instruments, make an eye sketch; if no map then try and get some framework, and a base to work on. Pace, use milestones, or telegraph posts or take range with range-finder.

A plan sketch made from one point with a range-finder and a compass, with intermediate detail filled in by eye, may be exceed-

ingly useful.

Having discussed the means of making plans and sketches, it may be asked "cui bono?" Is the advantage to be gained ever worth the trouble, on active service? Will not a simple freehand

diagram be sufficient, and easier to understand?

I reply with a question: "If you were called on to attack the position delineated in sketches 2 and 3, not having seen the ground, what course of action would appear to you likely to be suitable?" The obvious answer is "hold the enemy in front, and turn his left flank." Now as no battle is known to have been fought over this ground, and as an ounce of practice is worth pounds of theory, let us take examples from history. Our sketches serve very well to illustrate a piece of ground which was much in our minds a few years ago.

The numbers in the following extracts refer to the numbers in circles and letters on sketch 3.

See skeleton key, sketch 5, and note direction of N. point. Extract from orders by Lieutenant-General Sir Francis Clery, K.C.B., Commanding South Natal Field Force:—

#### CHIEVELY:

14th December 1899, 10 P.M.

1. The enemy is entrenched in the Kopjes north of Colenso Bridge. One large camp is reported to be near the Ladysmith Road about 5 miles N. W. of Colenso. Another large camp is reported in the hills which lie north of the Tugela, in a northerly direction from Hlangwhane Hill.

2. It is the intention of the G.O.C. to force the passage of

the Tugela to-morrow.

3. The 5th Brigade will move from its present camping ground at 4-30 A.M. and march towards the Bridle Drift, immediately west of the junction of Doornkop Sprint and the Tugela. The Brigade will cross at this point, and after crossing move along the left bank of the river towards the Kopjes north of the Iron Bridge.

General Hart, Commanding the 5th Brigade, had been provided with a tracing of a map, a Kaffir guide and an interpreter to assist him to find the "Bridle Drift."

The map was a plane table sketch prepared shortly before the action, an attempt to fill into a farm survey, made for land registration, as many of the topographical features as could be seen from a distance. It had not been verified by close reconnaissance of the river and both the sketch and the orders were misleading. The sketch was defective in three particulars; it showed the Spruit as running into the Tugela at the west bend of the loop, the Bridle Drift close to the junction of the Spruit, and also another loop of the river, west of the drift.\*

Hart's Brigade of Irishmen were led straight into the loop, fought their way up it with loss; found no drift, (though it afterwards transpired that there were two available) and after some hours were recalled and fell back, growling and unbeaten, ready to go for the enemy again if they could.

The attack on the Iron Bridge was mown down, Long's guns, unable to get fresh supplies of ammunition, were finally abandoned, the attack round to the right was recalled, and the battle of Colenso was lost.

Does this not show the usefulness of efficient reconnaissance sketches? It may be said the disaster was entirely due to the lack of such. We are told that Sir Redvers Buller was for some time under the impression that the Tugela ran to the south of Hlangwhane (i.e., along the line of the Gomba Stream), and that this misunderstanding modified his whole course of action.

<sup>\* &</sup>quot;Official History of the War in S. Africa, 1899-02," Vol. I.



It is as though the officer who filled in sketch 2 had failed to push forward as far as the route shown on the plan, and knowing a deep river flowed across his front, had shown it quite incorrectly at F, and also as following the line of the nullah from Shahpur, past Sarpola Hadi.

The utility of the panorama sketch again is well illustrated by the sketch 6, which was executed by two R. A. officers, with a rangefinder and shows the true position of Hlangwhane, relatively to

the river.

After Colenso, which was fought on 15th December 1899, came the Acton Homes Spionkop, Vaal Krantz Campaign, and it was not till the middle of February 1900 that Buller decided to try

via Hlangwhane.

Here again he was hampered, and lost time, for want of proper reconnaissance sketches. The official history, referring to their series of actions,\* says that Sir Redvers Buller either gave verbal instructions to his generals, or supplemented written orders by oral explanation. This was on account of the difficulty of describing in writing the features of this hilly country. It had been surveyed, but solely with a view to settling the boundaries of farms, and the map hurriedly compiled from these farm surveys often misrepresented or wholly ignored the military features of the ground. Great efforts had been made to correct the defects, but the only information obtainable was not that of soldiers trained to study country from a professional standpoint. The map, though far better than none at all, was frequently very misleading.

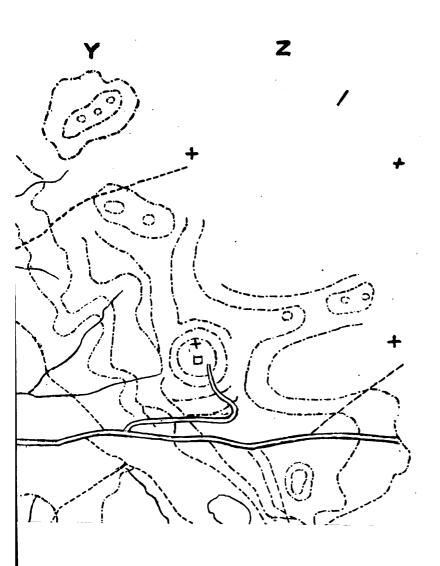
The difficulty was increased by the absence of landmarks, by

which the ground could be described.

Moving from Chieveley (1), via Gun Hill, Buller reoccupied Hussar Hill (7). Thence he reconnoitred Green Hill (6) and in succession captured this hill, Cingolo Mountain (4), Monte Christo (5) and Hlangwhane (3). Pushing on to Naval Hill (one Tree Hill on sketch 2) he bridged the river and fought his way to Ladysmith.

One more remark:—It is often our duty to check the survey maps of large tracts of country, and this is a task imposed with the definite object of ensuring that these maps will not play a commander false, as Buller's maps did. Bearing this object in mind, and regarding the work as an exercise in reading ground, as a soldier is required to do, tactically and strategically, the irksomeness will be at least decreased. If in addition we look on the result of our labour as a record, the falsity or inaccuracy of which may lead to loss or disaster in actual warfare (it is conceivable that officers were employed in peace time varifying plans of Natal), we shall then be willing to put our best into the performance and carry it out with interest.

<sup>&</sup>quot; Vo!. II, p. 435.





Digitized by Google

Steep stony hills enemy on crest, seen as marked in red

ISglabat Khan's Tomb

 $\mathsf{Digitized}\,\mathsf{by}\,Google$ 

To Ladysmith

R. TUGELA

1. Chievele

2. Colenso 1

3. Hlangw

4 Cingolo 5. Monte G

6. Green A 7. Hussar

 $\mathsf{Digitized}\,\mathsf{by}\,Google$ 



at drill. He was answered: "If you make such a fuss about a few

#### DEVELOPMENT OF CAVALRY TACTICS.

#### By Captain A. H. C. Kearsey, D.S.O., 10th Hussars.

The rise and decline of cavalry is perhaps the most striking phenomenon in the history of tactics; and even if we go no further back than the middle of the 18th century, when Frederick the Great set up a standard for European armies which still endures (pace "Cavalry Training"), we may trace the vicissitudes of this "arm" with sufficient completeness for the purposes of an essay, which is to

be practical rather than antiquarian in its character.

On ascending the throne of Prussia in 1740, Frederick found the cavalry to consist of heavy men on colossal horses. According to Nolan, they dared not even walk on a bad pavement; on ground that was uneven they dared not trot. They had been drilled to wheel into line to the left (if right in front) or to the right (if left in front); but there was no method of "deploying" or forming line in the direction in which they were moving in column. They used fire arms, whether mounted or dismounted, and advanced—they called it

"charging"—at a walk or trot.

Brackenbury tells how, at the battle of Mollwitz in 1741, the Austrian and Prussian cavalry 8,000 of the former, 4,000 of the latter, faced each other, each prolonging the infantry line on both flanks; how the Prussians misjudged distance in taking up points to form on, and so threw out the entire line; how the Austrian horse, having learnt something of the value of pace and swordsmanship from their late antagonists, the Turks, assailed the Prussian cavalry at speed and drove them headlong from the field; how the Austrian horse then passed in front and rear of the enemy's 1st line carried off 9 guns, again and again charging unbroken infantry, and even sweeping round to the rear of the 2nd line, and vigorously Incidentally, the attacking until their commander was killed. Austrians swept the Prussian cavalry out of existence; for Frederick never again ventured into battle with his father's obsolete horsemen, nor with the old type of cavalry leader.

Schulenberg had been slain at Mollwitz, and Frederick, despite opposition from senior officers, unearthed a few leaders like Ziethen (whose chance now came at the age of forty-two) and Buddenbrock, and went in for radical reform. No more did Prussian cavalry stand in line with a couple of grenadier battalions, interspersed between the squadrons to give them stability! Frederick abolished the firing

exercises and practised riding.

His hussars were trained to such a point that even Frederick a hard man, if ever there was one, remonstrated with his new cavalry commanders, and complained of the number of deaths by accidents at drill. He was answered: "If you make such a fuss about a few



broken necks, your Majesty will never have the bold horsemen you require for the field."

The weapon of the new type of cavalry was the sword; its tactics were founded on speed in the horse and determination in the horseman; impetuosity in attack was its creed; its manœuvres gave rise to Frederick's maxim, "Three horsemen in the enemy's rear do more than fifty in his front."

Nor was this system of cavalry training the slow product of experiments, temporising expedients and half measures. After Mollwitz, the wand of a magician, seemed to pass over the Prussian horsemen, transforming them into that wonderful instrument of offensive tactics with which Frederick decided more than half his great battles.

That gifted, but ill-fated, squadron leader, Captain Nolan (15th Hussars), who fifty-three years ago made the attempt to break through our superstitions in regard to "pivot flanks," investigated Frederick's battles, hoping to discover the secret of success in cavalry combats, which evidently was possessed by Ziethen and Seidlitz; but he could discover no more than the fact that these great leaders of horse always tried to attack front, flank and rear at the same time. "In the two first attacks, or in front and flank, they generally succeeded. How they did so has remained a mystery to this day."

A few things, however, we know, which it may be useful to recall, in view of current opinion as to the effect of modern firearms on the tactics of modern cavalry. We know that the battles of the 18th century were remarkable for heavy losses on both sides; and if, as some allege, the flintlock musket and smooth-bore cannon were innocuous, as compared with the small-bore rifle and the Q. F. gun, what, we ask, was the agent of destruction in the battles of the Seven Years' War?

Even at Mollwitz, the "parade" battle, as Brackenbury contemptuously styles it, the victors lost 4,613 and the vanquished 4,400 men; that is, nearly 23 per cent of the forces engaged.

By means of weapons which now are seen only in museums of antiquities-or by the action of that "arm" whose weapons know no change—in Prussia at the end of Frederick's career one-sixth of the males capable of bearing arms had perished in battle; and who can reckon the losses of his enemies, Frenchmen, Austrians, Prussians, Saxons and Swedes? Whether the 20th century soldier has more to fear in battle than the soldier of the 18th century, is a question which specially concerns the "arm" whose tactics we are discussing. Clausewitz, the historian and critic, who outlived the Waterloo campaign—he was Chief of the Staff of Theilman's Corps at Wavre declares that at the battle of Mollwitz, the Prussians had brought the fire of their infantry to such a state of perfection that "there has been no improvement since then in that sense," and yet the Austrian cavalry all but gained the day on April 10th, 1741, charging home in face of infantry and artillery (60 guns), whose fire destroyed one-fifth of the Austrian army. At Fontenoy (1745) the fire of 20 battalions of British infantry and their "battalion" guns has been described as "infernal"; but it did not stop the gallant charge of a French division of cavalry, whose mission it was to gain time for the flanking movement that won the battle for Marshal Saxe.

Frederick's cavalry was however sui generis; it aimed at nothing short of decisive victory, with or without the assistance of the other arms. At Rossbach (November, 1757) for instance Seidlitz with 4,000 cavalry supported by 7 battalions and 18 guns, attacked the whole French army on the march, going through their massed cavalry four times, and then reforming his squadrons in a hollow to await a fresh opportunity to damage the enemy. His second attack was decisive and won the battle. The French lost 8,000 men and 70 guns; the Prussians only 541 men. At Chotusitz (1742) the Austrian and Prussian Cavalry alternately assailed their enemy's flanks, but the Prussians lost 1,200 horsemen owing to a panic which occurred through mistaking their own hussars for the enemy. At Hohenfriedburg (1745) the Prussians cavalry of the right wing beat the Saxon cavalry, while Ziethen's horse turned the right flank of the Austrians, and a dashing charge of Gessler's dragoons through a gap in the centre completed a victory which cost the allies 16,000 casualties. Again at Sohr (1745) Buddenbrock's cavalry beat the Austrian horse, and afterwards passing round to the reverse flank, reinforced by the remainder of the cavalry rolled up the enemy's right wing. The last cavalry charge that day secured 2,000 prisoners. Frederick had now such reliance on his troops that he took the offensive with an army of 18,000 against the Austrians with 34,000 who had "surprised" A third battle in 1745 at Kesseldorf, was essentially modern in character: there is an attack on an entrenched position by the Prussians, an attack which the Saxons repulse and then venture out of their works in counter-attack; but the Prussian cavalry (right wing) has been held in reserve, and is instantly launched at the flank of the counter attack. The Prussian 'bag' that day was 6,000 prisoners. Luderitz was in command of the cavalry at Kesseldorf, and here executed what Nolan says was a favourite manœuvre of the Prussian cavalry. A close column was formed at some distance in front of a line of squadrons, and the whole bore down at speed on the enemy's infantry. When the column broke through the enemy's ranks, the two rear squadrons wheeled outwards, and rolled up the broken infantry, whilst the squadrons in line rode straight over them, and followed the head of the column ready to fall on the enemy's cavalry if it should venture to attack the flank of the column.

Frederick's enemies grew so accustomed to being beaten by his cavalry that when once in a way, the tables were turned and Ziethen or Seidlitz was repulsed, they actually claimed a victory on that ground alone (Lobositz, 1756). Generally, the Austrians were only too glad to learn that the Prussian cavalry were plundering

their camp; for when so employed they stayed pursuit and allowed the fugitive cavalry to escape. After the battle of Prague (May 1757) poor Ziethen confessed with shame to the King "I cannot rank a hundred of them sober." But they had first driven the Austrian cavalry far from the battlefield, in pursuance of their orders.

At Kolin (June, 1757) Ziethen with 10,000 horse, having as usual chased the Austrian cavalry from the field, returned to attack the enemy's right rear; but alas, the blunder of Mannstein had ruined Frederick's combinations for the day, and cost him half his

infantry.

At Leuthen (December, 1757) the Prussian king entrusted the safety of his exposed (left) flank to the cavalry under Driesen, apt pupil of Ziethen, who kept his command concealed in a hollow till in due time the Austrian General, Lucchesi, noticed the seeming unprotected infantry, and himself headed the charge against Frederick's left flank. Driesen let the Austrian squadrons pass, and then thundered upon their rear, killed Lucchesi, and destroyed his cavalry; afterwards returning, he collected his forces for a crowning stroke since the Austrian right flank was now en l'air; and it only needed a charge of Prussian horse to smash the right wing of the Austrian army. The deed was quickly accomplished, and when Ziethen took up the pursuit he gathered in 2,000 fugitives. Frederick had attacked with 32,000 an army of 80,000 at a cost of 6,344; he killed and wounded 10,000 and captured 21,000 along with 116 guns.

For fifteen years the Prussian cavalry had been improving, and was now at its zenith; but its most glorious victory was yet to come at Zorndorf (1758), when Prussians and Russians fought until "the battle was ended by exhaustion and darkness, not by any manœuvre, nor because either side was mentally tired of slaying." More than 11,000 combatants were actually killed that day, and each army lost a third of its strength. On both wings of the Prussian army the cavalry was victorious. On the flank of the Russian counter attack 5,000 Prussian horse fell, and dashed it to pieces; the fugitive cavalry were let go; but the dogged Russian infantry were slain as they stood "till the arms of the troopers grew too weary to wield the sword." At another part of the field, Russian cavalry caught a Prussian battery unlimbering, and seized both guns and its infantry escort of one battalion; but their triumph was shortlived; for Seidlitz appeared with 61 squadrons, "sprang upon the Russian cavalry, shattered it to atoms, and recaptured both infantry and guns."

The criterion of genius is the founding of a school, and in war the aptest pupil often appears in the enemy's ranks. The mantle of Frederick fell upon Loudon, that soldier of fortune whose sword the Austrians bought after Frederick had declined his services. Like Ziethen, he had turned forty before his chance came. As a leader of irregulars he had proved a thorn in the side of Frederick ere he obtained an independent command at Kunersdorf (1758), at a time when the Austrian cavalry was regaining some of its ancient power

Loudon had 15,000 sabres when he united with Soltikoff and the Russians on the Oder. At Kunersdorf, Frederick had 170 guns in position and the cavalry was under Seidlitz, but on the wrong flank. Frederick received his first check when Loudon's cavalry assailed the flank of the Prussian grenadiers and routed them. Seidlitz was recalled to sweep Loudon's cavalry away as usual; but difficult ground intervened, and Seidlitz was charged as he emerged from a defile, and the great leader was wounded. Prince Eugene of Wurtemberg's dragoons and Puttkammer's hussars were ordered to destroy the Austrian infantry; but one leader was quickly killed and the other wounded, and so the charges ended in discomfiture to the Prussian cavalry. Now came Loudon's opportunity and he was swift to seize it. Fifteen thousand Austrian horse were launched upon Frederick's lines, and the Prussian right flank, already shaken, was smashed irretrievably. The rout was complete and Loudon pursued inexorably, taking nearly 6,000 prisoners, his own losses in killed and wounded being 1,768. Over 31,000 Russians and Prussians were killed or wounded at Kunersdorf, the victors coming off in hardly better case than the vanquished. This battle was Frederick's "Jena," in a tactical sense, and was due to the failure of his own, and the success of the Austrian cavalry.

## ESSAY OF THE 5TH MHOW DIVISION COMPETITION, 1908.

# "A Suggested Organization of Field and Wireless Telegraphy for Trans-Frontier Operations.

By Captain E. G. Hart, Supply and Transport Corps, Mhow.

Motto:—" Via una, unum cor."

War differs fundamentally from peace in that it is no respecter of persons, time, or place, Peace, with its attendant civilization, works towards specialization; war, on the other hand, has a generalizing effect on men: in peace the specialist comes to the fore; in war it is the jack-of-all trades, the "Handy man," whom we want. It would be perfectly feasible to train a nation to shoot far better than any army of to-day can, with a far less expenditure of time and money than is spent on any of the great national armies. yet only the most hare-brained of civilians would dare to assert that such a nation of specialists, in what may be called the work of a soldier, would be a match for even a tenth their number of trained soldiers. It is a recognition of the fact that a soldier must, in addition to his special duties of destruction, possess a good many other qualifications which can only be acquired by maintaining and training him in times of peace, that has led to the standing armies of these days.

Telegraphy is a product of peace and civilization, evolved by specialists along the most economical and commercial lines to meet the necessarily limited conditions of peace, and it will require considerable modification in apparatus, technique, and training of personnel to render its services efficient to meet the wider conditions of war. Almost every nation now maintains telegraph units as an integral portion of its standing army in order that it may not be behind its neighbours in the acquisition and distribution of information which an efficient telegraph service secures for its side in war.

The efficiency of such service will largely depend on its previous organization and training having been carefully considered and carried out with a due regard to the conditions under which it is to be employed. In India we at present maintain 5 telegraph sections, one of which is called an "Over-sea Telegraph Section" and has a definite war establishment laid down for it in the F.S. Manual; the other four would appear to be training depôts from which units would be mobilized on the outbreak of war. No organised wireless telegraph units exist at present in India. We

have to consider, therefore, whether the present organization fulfils our needs, and if not, what better provision could be made; and to do this properly we must first consider such other organizations as exist, or have been improvised for service, and then see how these, or our present organization, can best be modified to suit the peculiar conditions of warfare obtaining across the frontier. Unfortunately data on the subject are exceedingly meagre and difficult to get at, but such as have been arrived at, together with such lessons as are applicable to us, will now be given.

Telegraphy has been used in the field since the American War of Secession in 1861-5 when both sides made considerable use of it. Since then scarcely a campaign has passed in which it has not been used and appreciated. Field telegraphs are divided generally into air and cable line telegraphs; the former makes use of plain wire supported on poles, trees, etc., the latter lays an insulated wire along the surface of the ground, and is far quicker and less trouble-some to lay, but being more liable to damage and leaks, is not suited for permanent lines, and hence we often hear of cable lines laid during the advance of a force being replaced by air lines as soon as it is practicable to do so.

Air lines.—The supports for air lines are what cause most trouble in the temporary lines which are put up in the field, as owing to the difficulty of transport, only the lightest of poles can be provided. These give trouble by falling down in storms and high winds, by being burnt in grass fires (S. Africa in 1881), or by being knocked down by transport animals, etc. When the ground is at all hard and the line is being laid against time, the poles are seldom sunk to the proper depth, and consequently fall at the first opportunity. In a very damp and rainy climate it has been found advisable to use insulated wire for air lines as well as for cables, to avoid short circuits in case of the collapse of poles, which occurs more frequently when the ground is sodden and damp than otherwise. The rate of laying air lines varies from ½ to 1½ miles an hour; in Somaliland in 1903-4 an average of 10 miles a day was arrived at.

Cable lines.—Cables are insulated wires simply laid along the surface of the ground. The chief objections to them are their liability to damage by being cut by cart wheels and to rotting or destruction of the insulated covering leading to short circuits. Cable lines also suffer from the insulated covering concealing "breaks" when these occur. It is twice as bulky as ordinary line although not proportionately heavy, and it can be laid at almost twice the rate of air line, 20 miles a day being the average in Somaliland A forked stick was found to be a valuable tool there for keeping the cable down over bushes, etc.

Appendix A gives a table of the different organizations of telegraph units. In the British organizations the units are split up into a definite number of squads, each of which works two offices. In the Indian organization we find a British and a native personnel, the former presumably to work the instruments and the latter to

construct the line. In Somaliland no definite organization was adhered to, and each station had a personnel suited to its requirements which varied from two operators and one lineman to five or six operators and two or three linemen; it was found advisable to mount all the linemen in order to ensure defects being put to right quickly. A separate working (or construction) party of 13 men laid the line.

The respective spheres of wire and wireless telegraphy in the field are very clearly defined. When an air or cable line can be laid there is no doubt of its superiority over a wireless line, both in the quantity and the quality (or accuracy), of the messages which can be sent by it. It is, however, far slower to lay and get into working order, the equipment is far heavier and more liable to damage and interruption by the enemy, and considerable labour is required to pick up the line when no longer wanted. We can see therefore that wire telegraphy is for use between the headquarters of an army in the field and the base along an assured line of communications. and wireless telegraphy for communication between the detached portions of the field army, which will by its aid be able to successfully co-operate with each other at far greater distances apart than have hitherto been practicable. Both on account of the dissimilarity of the work and their spheres of action, separate units for the two branches must be organized and these must be entirely independent of each other.

Every nation adopts that organization for its army which is most suitable for the probable wars it will have to wage. In India. for the most part, these will be campaigns against the Pathan tribes on our N.-W. Frontier. We may, however, have to deal with other foes there as well, e.g., Russians and Afghans, both of whom have organised armies, and would prove considerably more difficult to defeat than the unorganised Pathan tribes. Our organization, therefore, whilst primarily designed for use against these Pathan tribes, should be equally capable of being successfully used against an organised enemy. Thus, though it is unnecessary to arrange for any "tuning" in our wireless telegraph equipment, if it is certain that it will never be required against any fee who could interrupt and read our messages, yet, as the Russians would be able to do so, we must provide for such a contingency. Looking at the N.-W. Frontier we see that it stretches for a length of some 700 miles, but is nowhere, as regards the independent tribes, more than sixty miles broad, and owing to the number of tribes which inhabit the country, their jealousy of each other, and their lack of organization, we shall find that the theatre of operations will never be very extended. In the Tirah campaign of 1897-8 the theatre of war was 60 miles broad by 30 miles long (i.e., from North to South). however, possible that we may have two or more small campaigns to deal with at the same time. This would seem to point to the advisability of several small units which could, if required, be combined for employment in a large theatre of war, rather than a few large units

which would have to be split up into detachments on service, and so lose the organization they have been accustomed to in peace.

The Pathans and other tribesmen we meet with on our frontiers are for the most part ideal soldiers in everything except their lack of organization; they are brave, hardy, fanatical, good marksmen and scouts, and capable of enduring hardships that no regular troops could ever be expected to face. They lack education, and will not be able, therefore, to interfere with our lines by "tapping" them; on the other hand, their great mobility and guerilla methods of warfare will mean more danger to our air and cable lines than we should have to fear with a civilized foe.

The country itself offers considerable difficulties: there are practically no roads, so that only pack transport can be utilized in the majority of expeditions. Everywhere it is broken by hills and mountains, or by large ravines, which render the laying of air and cable lines difficult, and enhances the value of wireless telegraphy, though it is not known how much intervening ranges of hills will interfere with the sending of messages by this means. The climate is one of extremes, and the equipment will have to be very carefully chosen and tested to stand it: alternative equipments should be provided for damp and dry climates according to the theatre of war, and the season of the year, e.g., in Sikkim or during the rains a greater proportion of insulated wire will be required than in Baluchistan or in the hot weather.

The strategy on these campaigns is usually of a fairly simple nature owing to the fact that we have no organized forces to cope with, and the warfare is entirely guerilla in type. The main body of our force usually has for its objective the headquarters of the most fertile valleys of the refractory tribe, and it makes for this along a definite and protected line of communications: from this point and also from the points en route it sends out small flying columns to less important strategic centres or to disperse small gatherings of These columns usually carry the whole of the supplies which they require during the time they will be detached from the main force with them, and entirely sever their connection with it for It is with these small flying columns that wireless telegraphy will find its greatest use in trans-frontier operations, for owing to the difficulty of obtaining reliable information in such wild and uncivilized countries where every inhabitant in the theatre of war is a latent foe, these columns will often be sent out with instructions based on data that will require considerable modification or alteration after they have started. Combined operations such as a "drive" will receive enormous assistance from wireless telegraphy.

It is evident, then, that we should provide for two classes of telegraph units, i.e., Field and Wireless, and that these should not be too large. A field unit should be divided into four or six squads, to work the same number of offices: two of these squads should be termed "terminus" squads and should have a stronger personnel than the other or "intermediate" squads, the personnel being divided into

operators and linemen and the latter being mounted. There should be two or three operators and one lineman per intermediate squad, and double these numbers for the terminus squads. Besides these squads there would be a separate working party of 2 officers, and 20—24 men who would be natives, the operating squads being Europeans. The transport personnel would form a third section under a Quarter-Master Havildar. The whole would be under a Major or Captain who would, in addition, be specially in charge of the operating squads. A normal equipment of 60 miles of air line and 30 miles of cable might be laid down, but as has already been suggested, this should always be specially considered according to the theatre of war and the season. As to the number of such units required, four would appear to be sufficient, inasmuch as additional intermediate squads could always be added to existing units if necessary without disturbing the general scheme of their organization.

With regard to wireless units, three companies of three stations each should be raised. Each station would be complete in itself with an establishment of one officer and from 6 to 8 men, three of whom should be trained European operators and the others native sappers accustomed to the erection of the equipment; the transport personnel would be separate as in the field units under a Quarter-Master Havildar. Ordnance mules would have to be provided for the carriage of as much of the equipment as possible, as with small motors, etc., to transport it, would be difficult to bring the loads down to 2 maunds in every case—an ordnance mule can be made to take loads

of 250 lbs. and more.\*

The engineer park at the base should comprise a special section divided into two sub-sections for the supply of telegraph material and should be under a warrant or N.-C. Officer who had had a certain amount of training and practical experience in both field and wireless telegraphy.

Such is a rough outline of how it seems that telegraph units for service on the Indian frontier should be organized: the details of the scheme must of course be left to officers with a thorough technical

knowledge of the subject.

<sup>\*</sup> An ammunition mule in a mountain battery used to carry a load (including its saddlery) of 368 lbs. although the weakest mules were so told off the gun loads being much more akward if lighter.

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#### SWISS INFANTRY TRAINING, MARCH 1907.

## Review from La Revue des Armies Etrangeres, June 1908.

By Captain V. G. Menzies, 129th Baluchis.

In view of the great attention paid latterly to the Swiss citizen army, which has been the model for our own territorial army, a few extracts from the latest manual for the training of Swiss Infantry (published 31st December 1907) may prove of interest to officers of our own army.

The new manual, taking into account the changes in infantry tactics brought about by magazine fire, quick-firing guns, smokeless powder, etc., leaves to the initiative of officers and men the task of

acting in war for the best of their common interests.

The authors, however, have not overlooked the fact that the free play of individual initiative might prove dangerous if the efforts of all were not simultaneously directed towards the same object. The manual therefore lays down that every body of men must be disciplined and cites the means for strengthening discipline, namely drill, which is the immediate, simultaneous and exact carrying out of certain motions, which the men should execute with all their energies. The offensive is insisted on throughout as the only means of obtaining a lasting victory.

The manual consists of an introduction and of three chapters on—(1) instruction, (2) methods to be used in action, (3) inspection

and marching past.

#### I.—Individual Instruction.

The introduction insists on the necessity for the thorough instruction of the recruit, explains the duties of the various grades and how these can best be carried out.

In the first chapter stress is again laid on the need of thorough individual instruction: the defects in individual instruction can never be corrected in parades of large bodies. In Switzerland, however, infantry recruit's drill only lasts 65 days; the number of movements and exercises it is necessary to teach the soldier has therefore been reduced to a minimum, a precaution, which allows of greater care being bestowed on them. The instruction consists of:—

# (a) Marching.

Three steps only, each of the same length (80 centimetres) are now laid down in place of the six steps of different length and pace of the former manual. These steps are: (1) the manœuvre step (116—120 paces a minute); (2) the balance-step (the same as above but with the leg stiffened) for purposes of drill and ceremonial; (3) the "double" (160 paces a minute) only to be used over short distances.

# (b) Musketry.

The former regulations allowed of cartridges being loaded singly or from the magazine for rapid fire. In the future there will be but one method of loading, i.e., through the magazine, which will always be open. There is also to be only one method of firing, i.e., independent fire; the instructor gives the object and distance and the order to commence fire. On the command "fire" the soldier brings his rifle to the "present," aims and fires, but the rifle must be brought to the present without hurrying and the soldier fires only when he is quite steady.

## (c) Rifle Exercises.

On parade there will be but one way of carrying the rifle—the "Slope," the "Sling Arms" of the former regulations being abolished. In extended order on field days and on the march, the rifles may be slung across either shoulder or hung round the neck, when climbing. These latter methods of carrying the rifle are not included amongst rifle exercises.

## (d) Skirmishing.

The soldier should know how to act by himself, if left without a leader. He should know how to occupy and prepare positions for defence; he should be able to judge distances, be able to regulate the rapidity of his fire, and be trained to strict fire-discipline.

Appealing to the spirit of "camaraderie" bred of dangers shared, the regulation adds: should the skirmisher notice that his comrades have not got the correct distance or that they are firing too rapidly he will draw their attention to this fact; should they not cease fire, when necessary, he will prevent their wasting ammunition.

#### II.—THE SECTION.

The section consists of several groups, each group comprising four complete files led by a corporal or old soldier. In extended order, the forward rushes are now to be carried out by small groups or even by individuals. The extent of the rush is made to defend on the ground, the effect of the hostile fire and the physical condition of the men, but once begun, the rush should be carried out as quickly as possible.

Fire control.—The fire of the company is no longer controlled by the company commander but by the section-leader, who will be in the firing line; only in exceptional cases will he be behind it; he will take cover like the remainder of his men, in order not to betray the position of his section. The section-leader gives the word when to open fire, determines the distance, watches the effect of the fire and regulates its rapidity. He is assisted by his N.-C. Os. and group leaders.

Very rapid fire is not insisted on, the best results at all distances being obtained by fire delivered without hurry. Each fire-unit fires in principle at the target immediately opposite.

Rifle-fire can be used effectively up to 500 metres against any target up to 1,000 metres against lines of skirmishers on important isolated targets up to 1,500 metres against companies in close order. batteries or squadrons. The necessity of carefully ascertaining the correct distance is insisted on as the better a body of men fire, the less will they hit the target if their sights are not correct; but on the other hand, the better a body of men fire, the easier it is to see whether the distance has been correctly judged or otherwise.

# III.—THE COMPANY.

The company consists of four sections, each with a maximum of 25 files. The formations are similar to ours. The captain gives the word of command and each section moves into its new place by

the shortest way.

Before an action, the captain issues combat-orders in which he states his intentions and assigns to each section a particular portion of the position to be attacked and its own special task. If necessary he keeps at his disposal a reserve, which he will throw into the balance, when he thinks fit. It is, however, the duty of the sectionleaders to order their units to deploy and commence fire when the time comes. The captain secures co-operation amongst his four sections by means of connecting files.

# IV .-- THE BATTALION.

The battalion consists of 3, 4, or 5 companies; each battalion possesses colours. In action the battalion is split up before entering the fire-swept zone.

## V.—THE REGIMENT.

The regiment (of 2-4 battalions), and the brigade of 2-3 regiments) manœuvre on the same principles as a battalion, which are similar to ours.

The Combat -Although, owing to her geographical position, Switzerland is on the strategical defensive, the manual recognises from first to last the imperative necessity for the tactical offensive.

Duty and Position of the G. O. C.—The G. O. C. should exercise a direct influence on the course of the battle, but should leave to his subordinates the choice of means wherewith to accomplish their task. At the commencement of the action the G. O. C. should keep in front so that messages may reach him quickly, that he may see things for himself, acquaint himself with the ground and direct the first deployment. Later he will place himself where he can best follow the course of the action and direct the decisive He will avoid frequently moving about so as to be always blow. easily found.

Plan of action.—The G. O. C., fully acquainted with the situation of his own troops, will seek to discover all he can about the enemy and his position even if he has no information concerning the enemy's activity. Once he has decided on his course, he should pursue it resolutely without allowing himself to be influenced by any counter-measures taken by the enemy. All the available forces should be kept ready to take part in the action, the chief forces being engaged where the decisive blow is to be struck.

Orders and co-operation.—The combat orders will be issued verbally; the regulations only lay down that they should be confirmed in writing where important bodies of troops are concerned and then only if there is time to issue sufficient copies. The manual

mentions two separate cases of offensive actions:

(1) The Encounter, i.e., the case of hostile columns on the march meeting. The duty of the advanced guard is in this case to take and hold any pivots of manœuvre, to ensure that the main body will have the space necessary for deployment, and to reconnoitre the situation. These duties are considered so important that it is left to the discretion of the O. C. main body to determine the attitude to be taken by the advance guard.

The artillery of the main body will hurry up as quickly as possible in order to increase the power of resistance of the units already engaged. The main body will continue to advance, will deploy and move to the attack. To sum up, the regulations insist on no time being lost-on the enemy being engaged as quickly and as energetically as possible in order to compel him to act

on the defensive.

(2). The attack on a tortified position.—The attack will be preceded by a very careful reconnaissance of the extent of the enemy's position, his artillery positions, advanced posts, obstacles, and the nature of the ground across which the attack is to be launched.

Officer's posts will constantly watch the hostile position. The officers of artillery and engineers will study the ground with a view how best to make use of their troops Search-lights will be used at night. Orders will be communicated by telegraph, telephone, coloured lights, rockets and orderlies.

Small bodies of infantry with machine guns will be pushed a head in order to protect and make the preparations

for the assault.

The enemy's advanced troops are first driven back on to the main position; the attack is then proceeded with.

This attack culminating in an assault will be carried out, only on exceptional occasions, by day, and then only if vigorously supported by artillery; generally speaking, it will take place at night, especially when over open ground, or better still at dawn.

The Defence.—Advanced positions (with reference to the main position) are not to be encouraged but their use is permitted in a few special cases, where it is a question of closing some defile or giving

the cavalry a rallying-point.

Infantry against Cavalry.—The attention of Os. C. Infantry is drawn to the fact that infantry should not let itself be diverted from its object by a cavalry charge; if cavalry only succeeds in causing the infantry to slacken its pace, its object will in most cases have been attained. The advice given to infantry is therefore only to oppose to the attacking cavalry just the number of rifles necessary to break its attack; fire could be opened at 500 metres.

The last chapter on inspections and ceremonial calls for no

special notice.

#### REVIEWS.

Notes on Field Artillery.—Published by the U. S. Cavalry Association.

A copy of a book bearing the above title has been received from the author, Captain Oliver L. Spaulding of the Fifth Field Artillery. United States Army. It is a handbook of artillery principles and material, compiled for the use of all arms, and resembles somewhat the handbooks on artillery that were formerly written by Morgan and by Scisson Pratt of the Royal Artillery. The information that this book purveys would be found in our own "Combined Training" and "Field Artillery Training," now that we have at last reached the stage in our development, when there is no better book on military art than the official textbooks. Captain Spaulding's book is no doubt a useful one for his own army, and fulfils a recognized want that no longer exists with us. It is of interest in that it enables us to compare our own views on artillery tactics with those of another army. The author acknowledges the use he has made of the writings of Generals Rohne and Langlois, and various others including also the French Captain Rocquerole and our own General May.

The German Official Account of the Russo-Japanese War. The Ya-lu.—Prepared in the Historical Section of the German General Staff. Authorised translation by Karl von Donat. Price 10s. 6d. Published by Messrs. Hugh Rees, Ltd.

This Volume is the first part of a complete history of the Russo-Japanese War, now being compiled by the Great General Staff in Berlin. Like the German Official Account of the War in South Africa, it promises to be a very valuable addition to the literature dealing with this great war and to be as impartial and painstaking a history as that was.

The fact that the translation is by Karl von Donat is sufficient guarantee that it is accurate as well as readable, the only troublesome feature to the English reader being the German spelling of names of places which are familiar to us from our own maps and literature on the subject. This, however, is only a minor point and any one already conversant with the general outlines of the war should have no difficulty in recognizing Fönhuan-tschön, for instance, as the place we know as Feng-hwang-cheng or Wi-tschu to be the same as Wi-ju-

The first three chapters deal with the events which led to the war, the theatre of war and the state of the opposing forces at its outbreak and are admirably clear and succinct. The rise of Japan from comparative barbarism is traced and the causes which led first to the Chino-Japanese War of 1894, and secondly to the Russo-Japanese War are set forth in as few words as possible.

The theatre of war, comprising both Korea and Southern Manchuria, is next described, special attention being paid to communications both by land and water. The Lines of Communications of each Power are also dealt with briefly as well as the difficulties with which each had to contend in waging war at such a distance from its primary base, the mother-country. It is pointed out that Russia laboured under fearful disadvantages in having to depend on a single line of railway some 5,000 miles in length for almost all reinforcements in both men and material.

The chapter dealing with the opposing forces is excellent. In it are given both the numbers available on each side at the outbreak of the war and a rough sketch of their organization and the lines on which they had been trained. The Navies of both Powers are also briefly described and compared.

Chapter IV contains a summary of events at sea, including the attack on Port Arthur and the attempts to block that port, up to the death of Admiral Makaroff and the landing of the first Japanese

Army at Chemulpho and Chinampho.

Chapter V deals with the course of events and the fighting in Korea up to the end of April, i.e., until the Russians and Japanese found themselves face to face on opposite sides of the Ya-lu. The Battle of the Ya-lu is described in detail in the sixth and last chapter and the lessons that may be deduced from it are carefully discussed.

Then follow "Comments" which are particularly interesting and instructive, as they deal with the preliminary strategy of both sides and the mistakes made, and point out why the Russians were so invariably unsuccessful. The concluding words of the book are worthy of note: "The Russian conduct of operations was doomed, during the whole war, never to find a right way out of this partially self-imposed defensive attitude."

At the end of the book there are several appendices, giving details as to composition, numbers, etc., of the opposing forces; also a few reproductions of photographs and six excellent maps. In addition, there is a list at the beginning, giving the explanation of abbreviations used on the maps, which is necessary for English readers who are not thoroughly conversant with German military terms.

Although this volume deals with only a small portion of the whole campaign, yet it will be extremely useful to officers who are studying for the Staff College and others who are anxious to gain an insight into the reasons and motives which guided the strategy of each side at the commencement of the war. It is well and clearly written without any apparent bias, and the translation except for a few "teutonisms" and the peculiar spelling of names before referred to leaves little to be desired. It seems, however, a pity that the price cannot be reduced below 10s. 6d., which seems rather high when it is remembered that the complete history of the war will probably run into several volumes, and that officers are now-a-days obliged to buy large numbers of books to enable them to improve their professional knowledge.

Lessons from 100 Notes made in Peace and War.—By Major General E. A. H. Alderson, C.B. Price 2s. Publishers:—Messrs. Gale and Polden, Ltd.

This little book contains many useful hints and suggestions for the officer, whether he be at manœuvres, on active service or only doing his ordinary work. General Alderson explains that he jotted down these notes at various times in his life, whenever a particular idea struck him, and he has added explanatory comments and illustrations of the truth of the remark.

Many of the notes seem truisms, but the lessons drawn from them are illuminating and serve to impress their truth and value on the reader's mind. For instance, preaching from the text: "Nothing makes men so utterly 'out of hand' as real burning thirst"; the author relates how during a certain campaign in the desert he saw men, for whom no proper arrangements in this respect had been made, fighting like wild beasts for water at a filthy pool, utterly regardless of orders or anything else. From this incident he deduces the lesson that officers must take the greatest pains to ensure that the men are properly supplied with water, especially in a desert country.

It would be impossible, in the limits of a short review, to give many examples showing the value of these notes, but one or two may perhaps be quoted to show their scope. "When in command and arranging for work, try and think how the date, etc., of the work will effect the amusements of others." This seems very sound advice. "Organization is the forerunner of success." "Justification of departure from orders lies not in success but in the conditions of the case." "In battle habit is everything." These few quotations will

serve to show the lines on which the book is written.

At the end are some useful appendices: "A Few Notes on Orders," "Communication," "Notes for Gallopers," "Notes on the writing of Reports, etc., in the Field," "Outline of an Appreciation of a Situation" and "Thoughts on the Writing of Memoirs and Reports." These appendices are, if possible, more useful than the "Notes" themselves.

Official History of the Russo-Japanese War.—Part II. From the Battle of the Ya-lu to Liao-yang, exclusive. Prepared by the Historical Section of the Committee of Imperial Defence. Price 5s. Publishers:—Messrs. Harrison and Sons, St. Martin's Lane.

As stated in the preface, this, the second instalment of the British Official History of the War, forms the advanced portion of a combined naval and military history, which is being compiled from official and authoritative sources by the Committee of Imperial Defence. In it only operations on land between the 1st May and the end of August 1904, have been dealt with and Naval operations have merely been referred to in so far as they affected the general course of events in the field. It is further stated that, in accordance with the wishes of the General Staff, all comments are withheld until the whole work is completed.

The book is especially valuable to the earnest student of the campaign, since, being an official account, sources of information were accessible which are closed to the general public or even the war correspondent and the information is accurate and authoritative.

The general scheme of the book has been to allot a chapter to each series of operations which culminated in a definite and more or less decisive action, which effected the further conduct of the war. Thus, the first chapter (Chapter VII of the whole work) deals with the landing of the Second Japanese Army on the Liao-tang Peninsula and the Battle of Nan-shan. The next describes the northward advance of this army, which culminated in the Battle of Te-li-ssu. After that, still following the movements of this army, Ta-shih-chiao is dealt with.

Then we pass to the operations of the Fourth Japanese Army, which landed at Ta-ku-shan, after it had practically got into touch with the Second Army, and the actions of Hsiu-yen, Fen-shuiling and Hsi-mucheng are described.

Next we come to the advance of the First Army from the Ya-lu and the actions of Chiao-tou, Mo-tien-ling and Yu-shu Ling-Yang-tsu-ling, which brought these three armies on to one line facing Liao-yang, where it was anticipated that the Russians would for the first time make a determined resistance.

The twelfth and last chapter gives a summary of events from the 1st May to the 22nd August, 1904, and states what has been the result of these operations. In conclusion a list of events which had occurred elsewhere is given, including the chief events at sea and the gradual closing in of the Third Army round Port Arthur.

Six appendices follow, which give the Order of Battle of the Japanese and Russian forces, a list of casualties and the amount of ammunition expended in each of the principal battles, which have already been described.

In a pocket at the end there are some excellent maps, which are beautifully reproduced and will be of the greatest assistance in following both the general situation and the details of the several actions. There are two strategical maps, one giving the situation as it was at the beginning of June 1904, and the other that of the 22nd August of the same year. These are on a scale of about 12 miles to the inch and admirably clear, without too much detail.

In addition we find 9 smaller tactical maps, on a scale of about one and a half miles to the inch, one of each action prescribed in the body of the book, and one map in the text, of the action at Chiao-tou. A particularly good feature of these maps, apart from their clearness, is that they are all on the same scale, so that the student is not worried by having to refer continually to the scale to ascertain distances.

On the whole, this is by far the most satisfactory account of the War in the Far East which has yet appeared, and can be strongly recommended to every officer desirous of studying the campaign

seriously. Only actual facts are dealt with and it cannot be considered in any sense a "popular" account, as it is quite devoid of any of the descriptive writing which is to be found in such books on the subject as have already appeared, which usually seems to cover a lack of accurate information.

Notes on Staff Rides and Regimental and Tactical Tours for Beginners.—New and Revised Edition. By Major T. E. Fowle, P.S.C., F.R.G.S., M.A., 1st Battn., Bedfordshire Regiment. Price 2s. Publishers:—Messrs. Gale and Polden, Ltd.

There is not very much that is new in this little book, but it will probably be found of considerable use to those who have never taken part in a Staff Ride and are somewhat vague as to what they will have to do when detailed for one. It is hardly as well written or as sound as Colonel Laking's "Staff Rides and Regimental Tours", which was recently reviewed in these pages, but, on the other hand, it is written more simply and is cheaper.

There is a good deal in it which is to be found in other books, notably the "Manual of Military Sketching and Reconnaissance," but, when all is said and done, it is very handy to have such information as the headings for Orders in the Field, for various reconnaissance reports, etc., in the same book which tells you about your Staff Ride.

Section I, "General Instructions," explains shortly the purpose and nature of a Staff Ride and is admirably clear, as also are the "Suggestions for Directors," which leave little to be desired. But after this good beginning the matter falls off somewhat, it must be confessed, and the rest of the book seems a little haphazard in treatment and arrangement, though the instructions and advice given are excellent in their way.

There are one or two novel features in the book, which, as far as the reviewer is aware, are not dealt with in any other book on this subject. For instance, the Sections entitled "A Possible Distribution of Staff Duties" and "Staff Duties before and after an Action," both of which are written especially with reference to India.

Some of the suggested forms are good, too, in particular examples of part of a Staff Diary and a form of Intelligence Report, and should be extremely useful to those who are rather doubtful as to the mean-

ing of those terms.

A good definition is given of the "Appreciation of a Situation" and there is an example of an actual one, which was written by the author during some maneuvres but is somewhat spoilt by its extreme length and discursiveness. True, the writer points out that it was worked out in great detail, presumably for purposes of instruction, but it seems unnecessarily long for any purpose whatsoever and the slightly unintelligent officer, who took it as his model, would probably find himself severely taken to task for his verbosity.

A good deal of excellent advice is given, and, as already stated, the book will be useful to the unexperienced beginner, as well as to others who have only had very limited experience. A good point

is that the headings of paragraphs are printed in heavy black type, so that it is very easy to find what you want at a glance.

Grant and Lee in Virginia. May and June 1864.—By Lieutenant-Colonel H. M. E. Brunker. Price 3s. Publishers:—Messrs. Forster, Groom and Co., Ltd.

This is a short summary of the above campaign, designed to assist the officer who is studying for his promotion examination or for the Indian Staff College, this being the campaign laid down for the Military History Paper in the examinations for Promotion in India of March and October 1909, as well as for admission to the Indian Staff College in December of this year.

It does not profess to be a complete account of this important campaign. For further information the student must refer to the larger histories, e.g., Dr. Miller Maguire's "The Campaign in Virginia," but should prove a useful aid to enable him to get a

general grasp of the course of events of this period.

The introduction gives a short and clear account of the general situation before the crossing of the Rapidan by General Grant and a description of the Theatre of Operations. The strength and composition of the opposing armies are given in brief and the plans of campaign of the Generals on both sides.

Then follows a Chronological Summary of the principal events of the war between the 9th March, when General Grant was appointed to the supreme command of the Federal armies, and the end of June.

Chapters IV and V contain Comments on the Campaign in Eastern Virginia and a Summary of the Battles, in which an enormous amount of information is compressed into a very small space.

There are six good maps at the end, one strategical, to illustrate the whole course of the operations, and the rest tactical, illustrating

the various more important battles.

The strategy of both sides in the campaign is well described and criticised in the "Comments" and one gets a very good bird's-eyes view of the whole.

It would, perhaps, be too much to say that an officer could get good marks in both the general and special papers by studying this book alone, but it will be of great value as a preliminary to enable him to read the more detailed accounts of the campaign intelligently and with profit. The price is certainly not prohibitive and every officer anxious to pass a good examination in this difficult subject should get a copy.

The clearness and brevity of the style may be instanced by a

quotation from the Comments on the campaign.

"On the 4th May, Grant crossed the Rapidan, hoping to be able to get through the wilderness without having to fight a battle in that intricate and difficult region. Lee, confident in the quality of his men, though only about half the strength of the Federals, advanced with the object of attacking, and, if possible, decisively defeating, the army of the Potomac.

Lee, by his action, prevented Grant from turning his flank, but it is argued, he might have done this without a battle, by entrenching a position across Grant's path."

Military History for Examinations in 1908 and 1909. Questions on Grant's Operations in Virginia from 3rd May to 30th June 1864.—By Lieut.-Colonel H. M. E. Brunker. Price 1s. Publishers:—Messrs Forster, Groom and Co., Ltd.

Now-a-days an officer working for his professional examinations certainly cannot complain of a lack of material for study or a want of aids to make his task easier, even if his pocket suffers from trying to keep pace with the ever-increasing amount of military literature he feels bound to buy. This is another of the aids, to be used, one presumes, in conjunction with the book reviewed above, though in this also there is a Summary of the Campaign, somewhat similar to that in the other book, which seems superfluous, as it differs from the other merely in length and the Map of the Theatre of Operations is the same as in the other.

The questions, however, are very good and clearly put, and it is safe to say that the officer who could answer the bulk of them satisfactorily would not have much to fear from the examiner. There are 75 of them, covering a wide range of ground, both strategical and tactical. The answers are not given, as the questions are intended apparently to guide the student in reading up the campaign as well as to show him the kind of things he may expect to be asked.

From this point of view, the pamphlet—it is little more—may be recommended strongly for examination purposes. It will be noted that the price is only one shilling and it is certainly marvellously cheap at that.

Sketch Map to illustrate the Virginian Campaign, being one of the Whitehall Series of Military Maps. Price 2s. 6d. Published by Messrs Forster, Groom & Co., Ltd.

This is another of the aids to preparation for the forthcoming Military History Examinations and should prove useful to the student, inasmuch as it is on a larger scale than those usually accompanying books on this campaign and consequently it is easier to trace the movements of the forces engaged. A number of flags, representing each army, are given with it, to enable the reader to mark the positions of the armies at the several stages of the conflict, and are certainly a useful feature.

There are also maps inset of the various battlefields, which do not, however, show the positions of the troops engaged, and inside the cover three or four pages of Notes on the Campaign, into which alot of information is compressed and from which it is possible to gain a comprehensive view of the whole series of operations.

Notes on Visual Training and Judging Distance in relation to Musketry. By Qr. Mr. Sergeant-Instructor J. Bostock, School of Musketry, Hythe. Price 6d. Published by Messrs. Gale and Polden, Ltd., Aldershot.

These notes have been compiled for the assistance and guidance of Instructors in Musketry, in which term may be included every officer and non-commissioned officer. As the writer truthfully remarks, too little attention has usually been paid to these most important branches of the science of Musketry, many Instructors imagining that almost their whole duty is to teach men to shoot straight. Most people hardly realise the truth of the fact, which only needs consideration for a moment to convince one of the absurdity of thinking otherwise, that the better shot a man is, the worse will be the results of his shooting if his rifle is wrongly sighted, in other words, if he has failed to judge the distance of the target correctly. In these days of widely extended fronts, it not frequently happens that a man has to estimate distance for himself and even find his own target; he cannot have a Non-Commissioned Officer always at his elbow to point out the target and give him the range and mekometers and other range-finders can only be used on fairly large, and easily visible targets. The truth of this was very well exemplified in the War in South Africa and has been frequently in Frontier expeditions. writer remarks that many a man came back to camp after an action in South Africa, saying: "I never fired a shot all day, I never saw anyone to fire at."

This, Qr.-Mr. Sergeant Bostock points out, was very often due to the fact that the eyesight of the men had not been trained to pick out small and indistinct objects and that only practice was needed, was proved by the fact that by the end of the war our men became

just as quick at spotting an enemy as the Boer was.

In this little book it is explained how the eyesight and judgment can best be trained by a progressive system of instruction, beginning with the improvement of the eyesight. The recruit, as a rule, however good his eyesight may be, is utterly unable to spot anything which at all harmonises with the colour of the ground. In the words of these notes—"It is found that such men, at recruittraining, cannot even see a man lying in the open at 500 yards, without very careful direction as to his position."

The method of instruction is very clearly laid down by the author and cannot fail to be of help to every Instructor, whether Officer or Non-Commissioned Officer. In addition, several excellent suggestions are made, which are worthy of attention, e.g., that the skilled judger of distance should be rewarded in the same way as the

marksmen, for instance.

The book is very cheap at six pence and should be in the possession of every Instructor in the difficult art of Musketry.

How to Instruct in Aiming and Firing. By Qr. Mr. Sergeant-Instructor J. Bostock, Hythe Staff. Third Edition. Price 6d. Publisher:—Messrs. Gale and Polden, Ltd.

This forms a very good companion to the little book reviewed ante, and is one of the series of Messrs. Gale and Polden's Military Series, which are specially suitable for the Non-Commissioned Officer though not by any means to be dispised by the Officer, who wishes to become an efficient Instructor of his men. It is very clear and consise in telling the Instructor what to teach and how to teach it.

In an admirable little preface, the writer explains shortly what the Instructor has to aim at in the Musketry training of the private soldier, and secondly, on what the efficiency of an Instructor depends. There is nothing very new in the book and it is very simply worded, so as to be easily comprehensible to any intelligent Non-Commissioned Officer and he cannot go far wrong if he follows the course advocated in teaching this part of the all-important subject of Musketry.

There are excellent plates illustrating correct and incorrect positions when firing, methods of utilising cover, etc., being reproductions of actual photographs taken at Hythe, as well as small illustrating cover.

trations showing the use of the sights.

When it is mentioned that this is one of the books required to be in the possession of Officers and Non-Commissioned Officers attending the School of Musketry at Hythe, it is superfluous to recommend it further, and its low price places it within the reach of all.

Every Officer and Non-Commissioned Officer should possess a copy, and it would be advantageous if it could be translated into Hindustani for the benefit of the Native Army.

#### PRECIS OF FOREIGN MILITARY PAPERS.

### RUSSIAN PAPERS.

Razvyedchik, 1st January 1909.

The importance of Port Arthur as regards the general course of the Japanese War.—Colonel Novitzki of the General Staff, who served in various staff appointments in Manchuria, gives his views in this article on the strategical and moral importance of Port Arthur. Strategically, fortresses are used in two ways (1) to bar a line of operations to an enemy, (2) to serve as a base for our own offensive movements. To fulfil the first task, a fortress must lie either on or close to the line of operations selected by the enemy. He is then compelled to expend his energy either to reduce or to contain it. Plevna is a good example of this "passive" use of a fortress. Port Arthur's situation, at the extremity of the Liao Tung peninsula, was such that it was far from the line of advance of the Japanese field armies. The more important rôle of fortresses is, however, to offer secure bases from which offensive operations, naval or Napoleon's movements based on military, can be undertaken. Dresden in 1813 show a master of war using a fortress to the best advantage in this sense. As regards land operations, Port Arthur's geographical position again precluded the possibility of it being employed for this purpose. It lay far from the main theatre of operations and was, by the Japanese plan of campaign, isolated during the greater part of the war. As a sea fortress it might indeed have played a most important part had the fleet based on it been capable of striking at the enemy's maritime lines of communication. From the day, however, that it became apparent that the Russian fleet was no match for the Japanese, the fortress lost its last chance of having any real influence on the course of the campaign. Port Arthur, in short, was unable to perform either of the two services that strategy demands of fortresses.

It has been urged that as the key to the Liao Tung peninsula and for reasons of Japanese prestige and national honour, the capture of Port Arthur was the main object of the war. A minute's reflection shows that Port Arthur was bound to be found at the end of the war in the hands of the Power which had won the campaign as a whole, and that the fate of the fortress was determined in the main theatre of war by the action of the field armies. It has also been maintained that, by containing many thousands of Japanese, Port Arthur rendered invaluable assistance to Kuropatkin's army. The necessity for devoting a portion of the available force to the siege of a fortress is only harmful when it reduces the force remaining below the minimum required to defeat the enemy's field army. The Japanese were, however, sufficiently strong to win every battle they fought up to and including Mukden, without Nogi's investing army.

They were, it is true, inferior in numbers, but their moral was so raised by the course of events that they had a decisive superiority over the force opposed to them. From a purely material point of view, the resistance offered by the garrison of Port Arthur had no influence on the general course of the war: that war and the fate of the fortress therewith was decided in the northern theatre of operations.

It is when we regard Port Arthur from the moral point of view that its true importance and the necessity for defending it to the last man becomes apparent. It was the fruit of the vigorous policy in the Far East which marked the declining years of the last century: it was destined, alas, to prove that that brilliant policy was not based on the material force required for its support. Port Arthur represented, in concrete form, the desire of the Russian nation to have an outlet on the Ocean and it was for this reason that the news of its fall struck chill to every Russian heart. Consciously or unconsciously every mujik knew that the war was fought to determine whether or no Russia was to have a window opening on to the Pacific. With Port Arthur fell the hope that this national aspiration would be fulfilled; the war then lost its moral justification, dragged on for a few more weary months and flickered out. men who died at Port Arthur died for this idea, and it was right that they should have been asked to do so.

## Voenni Sbornik, December 1908.

Winter instruction for officers.—A proposal has been advanced in the Russian army that commissions of General Staff Officers should be instituted which should hold examinations during the winter to test the theoretical and tactical knowledge of regimental They would allot marks and an officer's confidential report would be affected by the showing he made in this examination. The author, while admitting that the tactical knowledge of the average officer is unsatisfactory, protests vigorously against this proposal. In his 40 years' service he has frequently had to conduct the tactical training of officers. The bulk of them can solve problems on paper satisfactorily. When, however, the same officers are seen working in the field, it is found that some of those best in theory are the first to lose their heads and issue unpractical orders. Many who can do little on paper are clear-headed enough when it comes to issuing orders in the field. This type of man is wanted in war; he will be heavily penalised if the proposal is adopted. writer recalls an instance when an ex-professor from the Staff College found himself in command of a brigade. On his first field day he took up a position too small for the force under his command. the end of the day he assembled his officers and pointed out to them how clearly this proved that the highest theoretical training was useless without practice with troops in the field.

Dragomirof had a great disbelief in the educational value of theoretical problems. When in command of a division, in the seven-

ties, he abandoned this form of instruction altogether. Particularly for junior officers in command of small units he insisted on the necessity for practical tactical work only. This, of course, was possible only in the summer. In the winter he instituted weekly lectures, given by himself and selected officers. Of these officers two, Kosich and Kaulbars, have risen to high command. Lectures delivered by men of this stamp created such interest that an officer kept by duty from them considered himself injured. Dragomirof insisted also on the essential simplicity of tactics in the field.

The author considers that these views are still sound and that the winter instruction of officers should be limited to study of the regulations and training manuals and of map reading, supplemented by lectures on tactics and military history. In the months when field work is possible, tactical problems with actual troops should be set as often as possible and an officer's ability judged by his manner of solving them.

### Russki Invalid, 17th December 1908.

This number contains the last of a series of articles by a Russian officer, who has been touring in the Balkans; in it he gives his general views on the Bulgarian Army. For the last five years the War Ministry has received an average of £1,240,000 for military expenses. In addition to this 41 millions has been allotted to extraordinary expenditure, mainly re-armament and the provision of reserves of stores. The annual expenditure on the Army may therefore be put at over 2 millions sterling. A good deal of discontent has been expressed in the Bulgarian Press as regards the manner in which these sums, large for so small a country, have been expended. Bulgaria's annual revenue only averages £5,000,000. The distribution of the Army reflects the international situation with great accuracy. On the northern frontier, facing the Roumanians, is a comparatively weak force while from the west too no great danger is feared. Four battalions are considered sufficient for the Servian frontier. The bulk of the Army is placed in the south, ready for operations against the Turks. The general reserve is at Sofia, 4 infantry regiments, 6 field batteries and 10 squadrons of cavalry. In close proximity to the Turkish frontier are 16 infantry regiments, 24 batteries of field artillery and 14 squadrons: Plovdiva is the most important garrison The backbone of the army is the corps of officers and the long-service N.-C. O.'s In consequence of the fact that most of the infantry recruits only spend 18 months with the colours, the work thrown on the permanent staff is very severe. Of late years, the constant expectation of war with Turkey and a deficiency in the number of officers have greatly increased the pressure. In 1907 an order issued by the Minister for War declared that the moral and physical energy of officers must be maintained in order to enable them to cope with the heavy work before them-in fact if they became exhausted the efficiency of the Army must suffer. It was therefore directed that, before the fresh contingent of recruits

joined the colours, leave, extra to that sanctioned by regulation, should be granted to as many Officers and N.-C.O.'s as possible. It is clear from the issue of this order that the state of affairs brought about by continual overwork was serious. A Lieutenant's pay is £96 a year, a Company Commander's £180, a Lieutenant-Colonel's £240, a Brigadier's £372 and that of a full General £560. About 11 per cent of an officer's pay is deducted on account of pension fund and taxes; he, however, receives allowances, varying from £12 to £32 according to the station he is in and other circumstances. On meeting a Russian officer, Bulgarian officers at first show themselves very reserved and give vague and unsatisfactory replies to any question he may put. On better acquaintance they thaw considerably, but the difference between their reticence at home and the freedom with which, when abroad, they discuss military and political

questions, always remains very marked.

The Russki Invalid of 18th December 1908 has a review of Dr. Schlesinger's "Russland in XX Jahrhundert" which it declares to be the best work on modern Russia as viewed by foreigners now Schlesinger, a German observer, visited Russia in 1905-06, when the Revolution was at its height. Even then he declared that Russia's weakness was only temporary and warned his German readers that their eastern neighbour would rapidly recover from the effects of a disastrous foreign war and internal disturbances. took great interest in the spirit of the Army as revealed in conversation by officer and private alike. Russian soldiers, unlike those of the Western powers to whom religion is nothing, still attach a sacred importance to the oath of loyalty which binds them to the Tsar. Military enthusiasm is non-existent, nor was any trace of personal hatred of the Japanese to be observed. The feeling of the Russian soldier, garrisoned in Poland, towards the population of that conquered country was extremely sympathetic. One man said "they are peasants and workmen, just as we are, only poorer. It was dreadful to see how, when the mobilisation took place, the wives of the men called up wept and screamed. Now their children are starving in the villages, we feed them." A soldier of the Frontier Guard, who had been told by an agitator that Kuropatkin had sold the Russian plan of campaign to the Japanese, replied "I don't altogether believe that, because Kuropatkin begged the Tsar to allow him to serve with us, even in the ranks. Any way we shall win in the end." "But don't you know how many Russians have been killed?" "What matter? they'll send others." "And if no one wants to go to his death?" "Oh, a Russian soldier isn't afraid. You see, Sir, every one has got to die, some later, some earlier. No one dies twice, but you must die once." The fidelity, simplicity and fatalism of the men made a great impression on the writer. Of their officers he formed a less favourable opinion. They keep themselves too much apart, and though nothing is easier than to gain the affection of the men it is noticeable that they very rarely possess it. An ugly sign is the universal belief that the officers embezzle food

and stores; a suspicion of this description, in this case often too well-founded, is fatal to the feeling of mutual confidence that should exist between officers and men. Schlesinger remarks on the erroneous views held abroad regarding the Cossack, who is often described as little better than a bloodthirsty savage, hired to slaughter inoffending Liberals. The Cossacks are in reality strongly democratic and highly religious. Among them exist numerous non-orthodox sects who suffer much for what they believe to be the truth. That they stood firm in the troubles, shows their loyalty to the Tsar and is to their credit.

#### FRENCH PAPERS

#### Revue Militaire Suisse.

The August number contains among other things a collection of curious information under the title of the "History of the Swiss Flag." The Swiss colours in foreign service afford material for interesting reading. Every prince in Europe made use of the stout arm of the Swiss soldier of fortune, and everywhere the colours carried by these troops were in some way representative of Switzerland, the white cross being usually introduced.

The ancient Switzers carried the cult of the flag to an extreme. To lose it was the depth of shame, to capture the enemy's colours the height of ambition; to lay down one's life for the flag was a common place. A curious detail was that if a town lost its colours in the field, the new flag was marked by a flamme or long point which was deliberately cut off when the dishonoured flag was rehabi-

litated by some striking action.

In the battle of Lanpen (1339) 14 members of the Fülistorff family perished round the banner of Fribourg. At Sempach (1386) Nicolus Tut tore his flag from its staff and hid it in his breast. He was found later choked to death by an attempt to swallow the cloth. At Arbedo (1422) Pierre Kolin, standard-bearer of Zoug, fell covered with wounds, his son John pulled the standard from under the body, and waved it in the air wet with his father's blood. Being in his turn mortally wounded he tore the flag from the staff, wound it round his chest and plunged into a ditch. His friend Jean Landwig followed, and snatched the flag from the dying man's hand, and brandished it aloft again. Numerous other curious and interesting examples of devotion to the colours fill the article.

The same number has a careful and exhaustive examination by means of charts of the rejections for recruiting and service in Geneva and the whole of Switzerland. A remarkable feature in these charts is the sharp rise of recent years in the curve representing phthisis; the high percentages of flat-footedness are also remarkable. Generally speaking for recruits the rejections for the serious diseases appear to be on the increase. With men in the service apparently all diseases are slowly on the increase, though with these as with recruits phthisis seems far the most serious or common cause of unfitness.

The article gives a table showing the difference between recruits who have carried out some species of gymnastic training before coming up for examination, and those who have not. As explained in a former issue of the Journal of the U.S. I. the tests for recruit consist of a long jump, raising heavy dumb-bells and running a distance of 80 m. (87.49 yards) on the flat.

The results are a remarkable testimony to the value of physical training. For instance in raising the  $17 \ kg$  (37.47 lb.) dumb-bell; of the untrained men 52 per cent raised it from 3 to 5 times, whereas of those who had carried out a regular course 77 per cent raised the bell 3 to 5 times, and of these latter 66 men raised it 6 times. Similarly in the sprint; of the untrained 23 per cent did the course in 13 to 15 seconds, whereas 62 per cent of the trained took the same average time. Again of the untrained 48 per cent were passed as "fit" for service, 14 per cent were put back to come up later and 38 per cent finally rejected; whereas for the trained men the figures were 60 per cent, 12 per cent and 22 per cent.

From all these statistics the author draws the conclusion that some sort of physical training is a necessity if the standard of manhood of the nation is to be maintained. Moreover he argues that mere indulgence in sports and pastimes is not sufficient, in fact the cult of sport is very apt to be over-done, as shown by the increase in recent years of diseases of the respiratory organs, heart, etc., which are too often traceable to over-exertion in some form of sport, bicycling, etc. He therefore rather deprecates the excessive attention paid to sport of all kinds in the present day. On the other hand he considers that what is required is systematic pursuit of regular physical culture, such as gymnastics, Swedish exercises, etc., and that every effort should be made by public authorities to encourage and assist all kinds of gymnastic societies and the like.

Lastly the author glances at the factor of moral worth, —character. It is this that induces and enables a man to use and maintain his bodily faculties. And the author holds that the main spring of this is patriotism. Unless a love of his country be inculcated in him, no man will be prepared to undergo hardships and privations for the benefit of that country and to prepare and fit himself for such privations.

The number closes with an interesting article on "The Burden (Paquetage) of the Footsoldier."

A recent Committee in the Swiss army has made a report on the clothing and equipment of the soldier, which is under the consider-

ation of the higher authorities.

The Committee recommends a decrease in the weight carried by the soldier, which is arrived at by lightening the articles carried to the maximum consistent with strength; by adopting a large bread bag to be used either for food or for articles not required on the march, and in the latter case to be carried in carts; and by ordering the cape (capote) to be worn in winter only, its place being taken in summer by a combined cape and tent. Thus the normal weight carried by the man is reduced from 30.645 kg. (67.4 lbs.) to 25.79 kg. (56.81 lbs.). If the sacapain is filled with fatigue shoes and trousers, cap, linen, cleaning things, and two empty cartridge carriers, the weight is reduced 2.69 kg further, and the man carries in round numbers 23 kilogrammes (50.7 lbs.).



This figure the author looks upon as a maximum possible. He considers it should be a principle, that the unnecessary articles should not be carried by the soldier but in a kit bag on carts. Moreover, such bag should be entirely distinct from any receptacle for food. He then proceeds to discuss what the soldier really requires to have always at hand, and consequently to carry. The requirements in addition to clothing worn are reduced to the following as a minimum:—

Rifle and accessories.
120 rounds of ammunition.
One entrenching tool.
Bread.
One reserve ration.
Water bottle.
Mess tin.
Change of linen.
Cleaning materials.

This means (uniform included) a total weight of about 20 kilos (44 lbs.). This figure the author suggests as providing the best possible solution of the problem. All other articles (cape, etc.) are to be carried on carts.

The Austrian correspondent this month reports the early formation of a corps of volunteer motor cyclists in addition to the automobile corps which has proved so successful. The two corps will be under a single commander and bear the designation of "Corps of Austrian Volunteer Motorists and Motor Cyclists." The motor cycles are held to include light cars (voiturette).

The two corps will be used with the army in the field to carry orders and reports, and will form an organised part of the army in war time.

Members must be Austrian or Hungarian citizens and be in possession of a motor car of at least 16 H. P., a light car of 8 to 14 H. P., a motor cycle with trailer of 5 H. P., or a motor bicycle of 2 to 5 H. P. Members must have a driver's license.

Members engage in writing to serve in war time and to do three periods of ten days' training during four years in peace time.

The Vienna-Berlin race in which German officers took part as well as the Austrians is a striking proof of the activity of the Austrian corps. An incident of the day was that one of the German cars carried a bicycle which was considered an excellent idea. The theory of the race was a march by the allied armies to the frontier.

The September issue gives the new arrangements for the ammunition and other supply in the field for the Swiss army. For infantry there are now—

1st  $\ell$ chelon.—120 rounds carried on the soldier and 86 per null in battalion wagons = 206 rounds per rifle.

2nd échelon.—The infantry park carries in wagons and requisitioned vehicles 67 rounds per rifle.

The future arrangement will replace the requisitioned vehicles by wagons, thus about doubling the number of rounds in the 2nd échelon and bringing the total up to 340 per rifle.

The mountain artillery had 135 rounds a gun, whereas in future

the figure will be 258.

The commissariat will be as follows:-

1st échelon.—One daily ration and one reserve ration on the man, also one daily and one reserve ration on the carts belonging to units.

2nd échelon.—Supply column. Two daily and one reserve rations. Also a fourth reserve ration at the advanced depôt.

For animals the only difference is that there is no reserve ration carried on the animal nor is the fourth reserve ration maintained at the advanced depôt.

Articles in this number to which attention may be drawn are a historical survey of the situation in 1796 in its solution to the passage of the Grisons; and an account of a staff ride in France under the direction of General Lacroix, Vice-President of the "Conseil supérieur de la Guerre."

The October number is of more general interest. Among

other is a description of an "automatic target."

In Switzerland where the time for training is very limited it is of the greatest importance to reduce the waste of time which always accompanies firing on ranges, in signalling results, etc. This can only be obtained by an arrangement under which the effect of a shot is automatically and promptly indicated at the firing point. An invention by a Belgian staff officer, Captain Bremer, seems to fulfil these requirements.

The apparatus consists of a steel target of a special pattern electrically connected with a miniature target face at the firing

point. The latter is provided with a bell and an indicator.

When a shot hits the target an electric circuit is completed, a bell rings at the firing point and the indicator points to the precise spot on the miniature target face which corresponds to the hit on the

actual target.

The apparatus is not very elaborate, and, roughly speaking, consists in the target being made up of a number of movable segments, any one of these, if struck by a bullet, turns to the rear on an axis and makes an electric contact. There are a series of electric contacts which correspond to the various segments. Contact being made the current works the mechanism of the indicator at the firing point. The whole apparatus is automatic and requires no attention. Thus the presence of men at the butt can be dispensed with and all danger of accident can be ignored, with an appreciable simplification of procedure in addition to the saving in time.

The whole apparatus is manufactured if required in a portable form. The main objection is the cost which for a complete set with 300 m. (328 yds.) of cable comes to 3,300 francs (£132), and for this reason the Swiss Government has not yet adopted the system.

The "Grand Manœuvres in France" form the subject of another article. These were the first organised by General Lacroix.

The ruling idea in these manœuvres was that everything was to be conducted under field service conditions and the two commanders were therefore given entire independence of action. The only restriction was that each day's work would cease automatically at midday, and results then obtained would be considered as obtained

at nightfall. At that hour the troops were to be billeted.

The author of this article points out that though excellent in theory, in practice it is not possible to give the commanders complete liberty of action in manœuvres. For the result is that the two Generals spend the greater part of their time in manœuvring and do not come into contact, which last is the main desideratum in manœuvres, if not invariably so in actual war. And this actually happened more than once. Furthermore the director of manœuvres should be able to interfere as he may desire. In this case he actually did so in direct contravention of his own orders.

Similarly the instructions to billet the troops do not satisfy the critic who points out that on service troops bivouac where they are at nightfall. The order led to many curious happenings; in one

case certain troops reached their billets at 7 P.M.

Another of General Lacroix's orders was to the effect that every officer should at all times be prepared to answer any question as to the general situation and his particular share in it. To this end every officer was to be provided with a copy of the "general idea" of the manœuvres. But, as pointed out by the critic, in practice, it is not possible for individual subordinate officers to be at all times aware of the real state of affairs, and this was several times exemplified in these manœuvres.

The rules laid down for the umpires also come in for criticism. General Lacroix instituted a system of marks; for instance, infantry on the defensive if entrenched or lying down counted for four times its strength; infantry supported by artillery (in any position) counted for twice its strength. Then the umpire by applying rules such as these to two opposing forces decided, irrespective practically of all other factors, which party should be adjudged the victor.

The critic would prefer an appeal to chance with the aid of a coin or some such procedure. In practice, he says, the rules worked

indifferently.

Furthermore, the system introduced confined the duties of the umpires to the sphere of activity of the large units, armies, divisions and regiments. But battalions and smaller units were left to themselves. Thus on one occasion a cavalry subaltern was seen right in the midst of his enemies who were firing almost point-blank. Had any umpire been there he would have been declared twenty times out of action. As it was he carried his report back to his General in triumph.

The German correspondent has some notes on the imperial manœuvres at which the Emperor was present in person. One

interesting detail is that the commander of the "blue" side worked entirely à la Japonaise, that is to say, he remained at some distance from the field, acting entirely on information conveyed by telegraph, telephone, orderly, etc., and giving his orders by the same means, using the map all the time. But it seems doubtful whether the strength of the troops (one army corps) was sufficiently large to

warrant this procedure.

The offensive was much employed by both parties, though the situation rather demanded defensive tactics (the blue army from the south had reached the northern Vosges while the red force was coming round Trèves on the Moselle; the latter was supposed to have Metz and the former Strasburg: the blue force was marching to meet the red). But even on the offensive wide turning movements were largely employed. In contrast to the French manœuvres where in deference to public opinion all work ceased at midday the troops were severely tried (though not to the extent of the last manœuvres). The infantry on occasion did 55 km. (34 miles) a day and the cavalry 70 km. (43 miles), but there was but little lagging behind which was the more remarkable in that the proportion of reservists was high.

The November issue is of more than usual interest. The subject of the Q.-F. field gun is again taken up in "Encore le

canon à tir rapide."

The former articles traced the genesis of the existing French Q.-F. field gun chiefly under the auspices of Colonel Deport. The present article describes an improved gun which is the work of the

same officer, and is predicted to be the gun of the future.

The bore of the 1907-08 model is the same as that of the 1897 pattern gun, i.e., 75 mm. (2.95 inches). The shell is also as before 7.24 kg. (15.9 lbs.), but the charge has risen from 580 to 700 grammes (1.54 lb). The ballistic powers are considerably improved, the energy being 102 metre-tons (329.3 foot-tons) which means an appreciable increase in the effect of the gun. The average energy of the field gun of other nations is said to be 76 metre-tons (245.3 foot-tons).

At the same time the weight of the gun has been decreased from 1,870 to 1,560 kg. (3434.3 lbs.) when limbered up. The wagon limbered up weighs 1,500 kg. (3,302 lbs.) against the former 2,000 kg.

But only 80 rounds are carried in place of 92.

The lightening has been obtained by shortening the gun 5

calibres, and doing away with the firing brake.

Some trouble has been spent in making the equipment more mobile. The wheels have been increased in diameter to 1.43 m. (56 inch), which decreases the resistance to rolling especially in bad ground. Also when in action the number of men seated on the carriage is decreased by one. This reduction of personnel is obtained by utilising the shock of recoil to open the breach, and eject the empty cartridge case. Similarly the act of introducing the cartridge into the chamber sets in motion a mechanism which closes the breach. No movements of levers by hand are required. If necessary,

however, the automatic mechanism can be thrown out of gear and the breech worked by hand.

The shield is provided with wings and a sort of short sloping roof overhead; while the lower portion of the front is jointed, and has a kind of small spade which may be fixed in the ground to increase the stability of the carriage.

The recoil in the cradle is maintained at a constant length of 1,304 mm. (58 inches) by a special brake, which is placed under-

neath the gun.

In several other minor points Colonel Deport has introduced improvements, and it is believed that the new gun will come successfully out of its trials.

A short comparison of "French and German methods" in the

1908 manœuvres is of interest.

The Germans employed the turning principle on every occasion. On the 8th September, the "blue" side endeavoured to turn their enemy's flank with their whole force. But being badly informed by their cavalry a portion attacked one division of the "red" side in trenches while the remainder were "in the air." The "red" commander arrested the attempt with this one division, and with his main body enveloped the "blues," taking them in reverse and assuring his victory. A similar procedure was followed throughout the manœuvres.

This system of carrying out a turning movement, decided upon often even before contact is made, is that employed by the Germans in 1870; and it is of interest to note that the Japanese, thoroughly imbued with German ideas, used the same principle with success in Manchuria.

The French, on the other hand, employed as a rule a very different procedure, which is held to be derived directly from Napoleon's precepts—to engage everywhere, to see and fix the enemy and to provoke a decisive result by bringing strong reserves into action.

In the manœuvres Generals Millet and Trémeau sent out their cavalry and strong reconnaissances in force. These troops made contact, and on the 15th September both commanders engaged all along the line, but held strong forces in reserve with which to intervene when and where they should desire.

Unfortunately the wild rapidity of the advance of the firing lines gave the Generals no time to bring up their reserves. However, on the 17th when General Millet was retiring, his opponent with the help of his reserve was able to carry out a simultaneous front and flank attack, which resulted in Millet's troops being severely handled. But had the reserve been employed in strengthening the attack on the pivot of movement of the retreating troops, the event would probably have been more decisive.

Arguments are not wanting in favour of both systems. The partisans of the German method hold that in actual war the zone of combat is too deep for it to be possible to bring up the reserves with sufficient speed, and they quote the example of the Russian

second line corps at Liao Yang and Mukden, which marched from one point to another and always arrived too late.

The other side replies that after the wear and tear of a struggle which has been in progress for several days the minor reserves will have been absorbed, and that the entry into action of fresh troops will carry forward the whole line with a rush that the enemy will not be capable of resisting.

The answer to the problem can only be given by a great war between forces of equal value. Peace manageures will never supply a solution.

The remainder of the article discusses the procedure most suitable to Swiss conditions, the German being preferred with modifications.

A note-worthy article considers the question of the deputation of officers to foreign manœuvres. Though primarily of course the matter is looked at from the Swiss point of view, the conclusions arrived at are of general application. The advantages of an officer watching the procedure, of a foreign army are, first, that he learns in a sure and rapid manner a great deal about the composition, organisation, formations, uniforms and equipment of the foreign army. He can form an opinion on its moral value. He may study the geography and topography of the country, and the manners and customs of its people. He sees the three arms acting together and their accessory services at work. He notes points to be imitated and things to be avoided. Generally he enlarges his field of view, he emerges from his groove and learns to estimate his neighbours at something approaching their real value.

But it is pointed out that to obtain the full benefit of these advantages certain facilities require to be provided for the officers

who are deputed to foreign manauvres.

They should have some official status to enable them to pass everywhere and to be told the orders which are being issued to the troops.

They must have cheap and rapid means of transport.

They should be reimbursed a reasonable proportion of their

expenses.

Without these facilities there is no encouragement for the generality of officers to attend foreign manœuvres. Apart from the favoured few who can be officially attached to the foreign army there are not many attractions for officers who attend. They are compelled to attend in mufti, they have no official recognition and can obtain no information unless with great difficulty, are as a rule not in a position to provide themselves with a motor car for transport and are put to considerable expense.

If however the measures proposed could be taken a large number of officers would be glad to attend foreign manœuvres with great

resulting advantage to themselves and their own army.

The author then describes his experience when attendings (from the Swiss army) the German manœuvres in Baden. On this occasion

the Bâle Automobile Club offered to put a certain number of vehicles at the disposal of the Swiss Government. Parties of officers were made up and were officially "notified" to the German authorities. The car in which the author and three other officers were carried was the property of Lieutenant Roth, of the Swiss Cavalry, who drove himself.

The result was that for the day and a half that he was out the author was enabled to go everywhere, see everything and hear all the orders, etc., in good time, and all this without fatigue or inconvenience. The expenses for petrol, etc., were borne by Lieutenant Roth, but as the author points out few owners of cars would be prepared to do this. Therefore the expenses of transport should be borne by the State.

The German correspondent in this number has some notes on the motor wagons used in Germany for supply purposes. A number of these were employed in the imperial manœuvres, and as soon as the work there was over the cars were despatched to the manœuvre of the 18th Corps.

The majority of the wagons were allotted to the 21st Division as follows:—6 Busing cars, 1908 pattern, each with a trailer; 2 Daimlers (1908) with trailers; a fast Daimler for provision supply; one 1906 pattern Busing as a movable workshop; one Busing omnibus; 3 Daimlers, 1907 pattern, with trailers as reserves; and 2 motor cycles for transmission of orders, etc.

The 6 Busings and 2 Daimlers, 1908 pattern, were used for the ration supply with perfect success. They were all of the same power 30 H. P., forming a homogeneous column and had been approved by the military authorities which subsidised the firms. The use of these cars reduced the 60 to 72 vehicles (with two horses) required for the supply of a division to 16 vehicles all told. The saving in road space speaks for itself. The average loads were 3.9 and 1.9 tons for wagons and trailers respectively. The pace was 15 to 20 km. (9 to 12½ miles) per hour. The columns went from the provision depôt to the troops and back in the day.

During the manœuvres on the 21st September one column started from Ferndorf and reached its troops 22 km. (13·8 miles) away in two hours. It then followed the course of the manœuvres and was at the centres of cantonment before the troops. The vehicles were then unloaded and reached the depôt 30 km. (18 6 miles) from their starting point the same day. This made a total of 75 km. (46½ miles) for the day's work. On one occasion the Busing omnibus covered 120 km. (74½ miles in a day). The first Daimler more than once ran short of petrol, though its tank carried sufficient for 300 km. One day of its work extended from dawn to 3 a.m. the next morning.

There was no trouble with repairs, the workshop car proving equal to all emergencies. In fact on one occasion a broken axle was repaired in 12 hours by the two men on the wagon itself.

As an instance of handiness it is recorded that once a column of 16 vehicles was turned a half circle, when the space being very confined, each vehicle had to turn within a 10 metre (10.9 yds.) diameter. The operation was a complete success.

It is, however, remarked that in actual war it is very doubtful how long the roads would stand the wear and tear of these heavy

vehicles.

As far as a war between Russia and Germany is concerned, motor cars would be useless from the first, and for this reason Germany is compelled to provide for horsed vehicles as well as horseless.

### ITALIAN PAPERS.

### Rivista di Artigliería e Genio.

The September number is mostly technical, but an article on "Modern Means of Scouting and Information in Armies" is noticed below.

The author points out the importance of a well organised service of intelligence. Whether in the phase of preparation, or in the deployment before active operations or in the battle itself, information is a factor of the greatest consequence. And in modern fields of action the extended fronts render the rapid and accurate transmission of all information a matter of paramount necessity. A commander can no longer embrace the greater part of the field of battle in a single glance, he is compelled to rely on reports received often from very distant localities.

The system of exercising command from a point remote from the troops engaged was carried to its logical extreme by the Japanese in Manchuria, and its success was for the most part due to the ex-

cellent service of intelligence.

While on the other hand the defects in this branch of the army were largely responsible for the Russian failures. A striking instance occurred at Liaoyang. Had Kuropatkin in that battle been aware of Kuroki's perilous position on the 2nd and 3rd September, the issue of the action and of the campaign might have been very different.

The effect of dividing the large armies into relatively small fractions, which is a consequence of the modern extended positions, is to make it a necessity for the communications both from the units to headquarters and from the units to each other to be acurate, rapid and reliable.

The author divides the means of information into three parts—(a) means of observation, (b) means of correspondence, and (c) those of a mixed character.

(a) Means of observation.—These are spies and prisoners, officer's patrols, reconnaissances by cavalry and cyclists, captive and mobile balloons, offensive demonstrations, and lastly the combat itself. Of these the first two are of small value; cavalry patrols have a limited radius of action and their sphere of usefulness is restricted by the power of the horse and the necessity for concealment; cyclists are more generally useful and are capable of rapid and sweeping surveys.

The free balloon appears to be the most suitable instrument of intelligence. But an ordinary balloon is at the mercy of the winds and the dirigible, though no doubt a considerable step in advance, is far from the standard of practical excellence required. The Parseval

type of dirigible promises well, but there are many disadvantages. The observer is much hampered by the oscillation of the car. Photography is usually impossible, and it is very difficult to find one's position on the map, so unfamiliar is the aspect presented by the country below. Captive balloons are therefore still the most serviceable means of observation though attended by numerous inconveniences and unmanageable in a wind of any force.

(b) Means of correspondence or communication.—These must be numerous, accurate and rapid in action. The methods hitherto employed, viz., the horse, the carrier pigeon, visual signalling, the telegraph, and the telephone and photo-telegraphic apparatus are nowadays assisted by the bicycle, the motor car, the wireless

telegraph and the dirigible balloon.

The horse.—The comparative failure of cavalry in scouting in recent wars should not be taken to mean that the horse is no longer of any practical value in this regard, but rather to signify that cavalry, while employing orderlies for communication between relatively near bodies, as patrols, should have recourse to the telephone, telegraph, the cycle and the motor cycle to reach points further away.

Carrier pigeons have but a limited use in the field, from the difficulty of training them for service between moving terminal Their employment is confined to communication with forts, etc. Optical telegraphy, with helio or lamp is not considered by the author to be of great advantage, requiring as it does considerable care and trouble in selecting stations, favourable atmospheric conditions, and a specially trained staff. The electric telegraph represents a safe and certain means of communication, rapid, continuous and capable of covering the greatest distances. The field army can be connected with the base and the army head quarters with the subordinate officers, etc. The existing telegraphs of the country can be used in conjunction with portable field systems. Bare or covered wires can be used as circumstances require, and the telephone used to supplement the telegraph. It is in fact proposed that the telephone should always be substituted for the telegraph in the field as being simpler and quicker. The author remarks that the danger of lines being tapped is in practice less than is generally supposed. For in addition to the many difficulties which attend the operation itself, nothing can be done without warning the operators at the extremities of the line, and moreover important messages are usually sent in some disguised form so that if intercepted they are valueless.

The bicycle or the motor cycle is perhaps the best makeshift for the electric wire. But if used a regular system of relay stages should be organised to obtain the full benefit of the arrangement.

Automobiles.—The progress made with self-propelled vehicles places at the disposal of the modern army a most convenient and erliable means both of transmitting orders, etc, and of enabling subordinate commanders to obtain personal knowledge of the situation at distant points, with celerity and certainty and without undue fatigue.

Wireless telegraphy.—This system appears to be particularly suited to military purposes in that the weight and quantity of material required is far less than with the ordinary telegraph, and as compared with visual signalling there are no difficulties about choice of stations, weather, etc. It is, however, relatively a slow method, and though many attempts have been made no system has been invented up to date which will with absolute certainty ensure that the message travels to one destination and no other. All the same the many advantages of the system, not the least of which is the power of communication with ships at sea, render it a necessary adjunct to the army of to-day.

(c) Means of obtaining information and of communication.— In this category all forms of airships are comprised, whether in the shape of dirigible balloons or aeroplanes, helicopters, etc. The author has greater faith in the possibilities of the dirigible than the generality of authorities on the subject. He points out the services which this species of air-vessel can render by first observing the preparations and fortifications made in the enemy's territory, during mobilisation, watching the direction of movements and forecasting the probable zone of concentration; then during the campaign a dirigible can act as the connecting link between widely separated bodies, especially if mountains prevent communication by ordinary means; and lastly, the balloon affords special facilities during and before an action for reconnoitring the enemy's position, determining length of front, noting position of reserves, etc., and of the wings. For instance at St. Privat two Prussian army corps when endeavouring to turn the French right stumbled on the latter's front and thus created a very dangerous situation. Had a dirigible been available this would not have occurred.

In conclusion, the author points out that though in a particular case any one of the systems reviewed may prove the most suitable, yet in general not one of them contains in itself both a rapidly and continuous means of communication and at the same time organs for intelligence. Therefore all systems must be used in collaboration with one another to obtain the best results.

For strategic scouting cavalry will still be the most suitable means to be employed, and it should be assisted by the cycle.

On the actual field of battle captive and to some extent dirigible balloons will be very useful for intelligence work.

As to the means of communication the conclusion is that the more complicated systems (wireless telegraphy electric and optic telegraph, aerial navigation) should be left to special troops such as engineers; while the simpler things (signalling, telephones, cycles, motor cars, etc.,) should be left to the ordinary troops.

For artillery using indirect fire and infantry on the march, during the preparation for a battle, etc., etc., the telephone has become a necessity; while for cavalry on reconnaissance and outpost work it is scarcely less so.

Another item of interest in this number is a proposal to use elongated bullets in shrapnel shell, started by the German General The idea is that an elongated bullet which can be made to rotate on its own axis will possess much higher velocity and therefore man-killing power when it leaves the shell than the spherical pattern; and that a larger amount of the space in the shell can be filled by the elongated bullets.

General Wille proposes two methods of making the bullets revolve on leaving the shell. The first consisting of making the core of each bullet hollow and provided with ridges. The bullets are then strung on spindles which are fixed in the shell in the direction of the longer axis. The spindles are formed with grooves in which the ridges on The grooves are of screw thread formation, and the bullets engage.

when the shell bursts the spin is imparted to the bullets.

In the other system the interior of the shell is filled with a number of miniature rifle barrels. These are filled with bullets to which they impart the rotation.

This is roughly the principle of the proposal. It remains to be seen whether the hoped-for results will be attained in practice.

### July—August 1908.

This number provides plenty of excellent reading. The article on the "Employment of Field Artillery and the Co-ordination of its Action with the other Arms" is continued. Another article to be noticed examines the "Reorganisation of Siege Parks," but is too lengthy for reproduction. A short summary of an article on the Japanese Artillery is, however, given below.

## EMPLOYMENT OF FIELD ARTILLERY AND CO-ORDINATION OF ITS ACTION WITH THAT OF THE OTHER ARMS.

The article commences with a review of the present state of the field artillery material, its employment and its organisation and concludes with a review of the rules, exercises, managuvres, etc., best adapted to bring about perfect harmony in the action of this arm with the others.

Theoretically the field equipment has attained something like perfection. There is a Q.-F. gun of great efficiency against animate targets up to considerable ranges, mobile, well protected by shields and well provided with ammunition; there is a light howitzer for use against light field works, trenches, etc., but sufficiently mobile, and finally there is a heavy howitzer with which the more important works can be attacked and yet is capable of following troops along roads.

The apparent excellence of this equipment is, however, greatly discounted by the very various opinions as to whether the gun should fire a heavier shell, or be made more mobile; whether the light howitzer should be capable of attacking powerful works or not; and similarly by speculations as to what exactly should be the end and

aim of heavy artillery.



Answers to these questions were naturally sought in the recent wars but with indifferent success, from the fact that the equipment employed was itself out of date and insufficient.

### Employ.

The main lesson of the Manchurian campaign is a confirmation of the old axiom that the principal object of artillery is to prepare the way for the infantry, to second all its efforts and to accompany it with the maximum of energy throughout the combat, even to the

last decisive phase.

Against artillery preponderance of fire must be attained. To this end will contribute a powerful gun, a proper choice of the time for deployment and a judicious use of heavy artillery; the latter take advantage of their long range to cover the deployment of the field guns. Artillery should not be kept in reserve. The gun position should be carefully reconnoitred beforehand and chosen with a view both to the greatest effect on the enemy and to concealment. Indirect fire should be employed for choice, and opportunity taken to surprise the enemy with simultaneous fire from all the guns. The enemy's position should also be very carefully reconnoitred, and every effort made to induce him to disclose his guns. The Japanese frequently sent forward infantry to draw the enemy's artillery fire. When the enemy's guns have once been silenced a few batteries should be told off to watch for and quash any attempt to re-open fire.

Against infantry the field gun is usually most suitable, though when the infantry is sheltered in trenches the light field howitzer is

very useful.

Once the preparation for the infantry action is complete the artillery must accompany and support the former up and into the decisive phase. For this field guns are suitable while the heavy artillery attacks the hostile guns, which will inevitably re-open on the infantry assault, firing over the heads of their own infantry. The powerful shell and curved trajectory all combine to indicate the advantage of the use of heavy artillery for this work.

The employment of heavy artillery is in fact one of the most important problems of the day. The author considers that the main factor of difference between the heavy artillery and the field gun of to-day lies in the greater facilities for rapid and accurate ranging possessed by the former, and that to this quality are to be attributed such good results as were obtained with the indifferent material used in the Boer and Manchurian campaigns.

## Organisation.

The author gives a survey of the systems of different armies. In Germany a division is given a brigade of artillery, that is, two 6-battery regiments. The battery has six guns. An army corps of two divisions has therefore 24 batteries (3 of which are 105 m. howitzers) or 144 guns.

In France an army corps has 92 guns (21 batteries of 4 guns, and 2 of 4 short 120m. guns or in future 105m. howitzers).

It is proposed however to increase the total to 144 guns.

In Austria the army corps has 108 guns and 24 howitzers. But it is proposed to raise the figure to 216 which, as the army corps consists of three and not two divisions, will bring it more on a level with other armies. The battery has six guns.

The author then gives some remarks on the vexed questions of 4 or 6 as the most suitable number of guns for a battery. The Japanese used 6-gun batteries in the war, except in the case of Q.-F. captured guns which it is said were organised in 4-gun units. The Russian 8-gun battery with two captains lent itself readily to use in 4-gun units, and was so employed very frequently.

The Germans have at present retained the 6-gun organisation, but there is a considerable feeling in favour of the 4 gun system; and it is believed that if the French total of guns in the army corps is actually raised to 144 while the 4-gun battery is retained, the Ger-

mans will adopt the 4-gun system.

The French are firmly convinced of the superiority of their organisation, as being more manageable and more adaptable to the

ground.

After some details of the heavy artillery in the German, French and Austrian armies the author proceeds to the technical action of artillery with the other arms. He prefaces his remarks by observing that the necessity for complete harmony of action between all arms has always been paramount and is nothing new. He gives instances of the disaster which follows failure to observe this axiom as at Saint Privat where the Prussian artillery dislodged its own infantry from the village.

First, during the artillery preparation the infantry must advance at any sacrifice first to draw the fire from the enemy's guns and then to take advantage of the fire of their own guns. A bombardment

without an advance is waste of ammunition.

Next, when superiority of fire is established, the infantry must take up a fresh and advanced position, while the artillery continues to give its support.

A very close connection must be maintained between artillery

and infantry especially when the former fires over the latter.

When the decisive phase arrives the artillery harmonises its fire with the infantry advance, and the fire should be increased to the maximum and continued over the heads of the infantry until the latter have arrived within 300 m. of the enemy. The enemy should be compelled to keep under shelter, and reinforcements should be prevented from coming up.

On the defensive absolute concord of action is, if possible, more imperative than in the offensive. The artillery positions should be so well concealed that the attacker cannot see any vestige of the guns, and the infantry must be in effective support. Some guns will be brought up when the attacker makes his final assault to batter the assaulting columns up to the last minute, but the ment of guns is only practicable if the intentry give a protection.

The remainder of the article discusses the peace trace trace

suited to bring about the concerted action advocated.

### The Japanese artillery in 190%

Organisation.—One regiment for each of the 20 division of army. One regiment consists of 4 batteries divided in a 2 - A battery has 6 guns, 6 wagons and 1 cart, teams of a 2 - Also in addition:—

Three independent field artillery brigades each with 2 r \_ :

of 6 batteries.

Three independent mountain artillery battahons of 3  $\delta \alpha^2$  each.

Two brigades of heavy artillery; 2 regiments each

Two independent regiments and 6 independent lates

heavy artillery.

One regiment=3 battalions of 3 companies or byter a pendent battalions vary. The heavy articlery is interpreted partly as fortress artillery and partly as heavy to 1 a. These batteries are stationed in Formosa, Korea, etc. as a Japan itself.

There are four schools of instruction for officers, the said of the artiflery and engineer school, and the schools of ganners are a

and heavy artillery

# Equipment.

(a) 75 mm. (2.95 in.) Krupp guns.

(b) Osaka built guns on the 75 mm, model and from mass material.

(c) 75 mm. Arisaka pattern guns manufactured at Communication is 30 calibres in length range 8,500m. 9.7.5 s.m. muzzle velocity 520 m. (568 yds.), weight in battery with script kg. 1.984 lbs., weight of shell 6.5 kg. (14 lbs.), number of \$\mathbb{k}\_{\phi} = 2.3 shrapnel 210.

There are about 700 guns of the first two patterns, but see "

the last

The sighting gear has a Zoisa prismatic telescope mage 3 diameters. The graduations give 6 200 m. 6 583 years

Fixed ammunition is used, the projectiles are shrappe ( ) as

high explosive shell 4.

Fixe read to 7,900m (5.639 yds), 5 reends a mm., so considered the normal maximum rate of fire ethough the girls capable of more).

The mountain material at present is the old real feeting in used in the war. But it is proposed to introduce a lag reco-

CAFFIA Je.

The heavy artillery have the 195 mm. 41 in ) gin, and he like and 150 mm. howitzers (47 and 59).

The former is of Osaka manufacture and has a long recoil carriage, with an 8 horse train. The main data are—length 30 calibres, muzzle velocity 540m. (589 yds.), sights graduated to 7,800m. (8,529 yds.), maximum range 12,000m. (13,123 yds.), weight of shell 18 kg. (396 lbs.), weight of gun in batttery 2,250 kg. (4,960 lbs.), rate of fire 4 rounds per minute. The wagon carries 36 rounds.

The 120 mm. gun is partly Krupp and partly Osaka built. It is 10 calibres in length, initial velocity with No. 1 charge 291 m. (308 yds.), sights graduated to 5,680m., weight of piece 451 kg., projectile 20 kq., burster of high explosive shell 5 kq. The limber

carries 16 rounds, the wagon 32.

The 150 mm. is also of composite build. It is 11 calibres in length, initial velocity with No. 1 charge 290 m. (307 yds.), sights graduated to 5,890 m. (6,440 yds.), weight of projectile 36 kg., weight of high explosive burster for shell 8.5 kg. The limber carries 12 rounds, the wagon 24.

For siege parks a 210 mm. gun and a 1.25 cm. machine gun

are proposed.

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In the coast armaments various natures of guns are actually employed including mortars of 90, 150 and 240 mm, howitzers of 90, 105, 120, 150 and 280 mm., and guns of 90, 105, 120, 150, 190 240 and 270 mm. But in future only the 150 mm. Q.-F., the 270 and 305 mm. are to be used. Disappearing mountings are general.

Machine guns.—1,200 were ordered from the Hotchkiss firm in 1907. The pattern has been modified in accordance with the experience of the war. Shields are abolished, as being of little use and heavy. The gun can be traversed round the whole circle. The firing arrangement can be made fast with a spring hook to continue fire automatically.

The mountings for all arms are of tripod pattern and are carried

on pack horses.

A battery of 6 guns is allotted to each infantry regiment. A cavalry brigade has an 8-gun battery, which can be divided into two half batteries.

Hand grenades.—The Japanese have a hand grenade consisting of an iron tube 15 cm. (59 in.) long and containing 90 grammes of explosive. It has a wooden handle by which it may be thrown.

Factories, etc.—The most important are the Tokio and Osaka arsenals; the former manufactures rifles, swords, etc., ammunition (10,000 rounds per diem), bicycles. etc.; the latter manufactures guns and artillery material (using steel ingot obtained from Krupp and Creusot) carriages, torpedoes, etc.

Itabashi and Meguro are explosive factories for cordite, etc. Shingawa makes the Shimose powder, Ujji is an explosive factory as an annexe to Osaka, and Moji is a repairing establishment for arms,

carriages, etc.

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the Ba's Automobile Club offered to put a certain number of vehat the disposal of the Swiss Government. Purpos of the swimmed up and were offenally of notified? to the German with the Theorem were common to the property of Leutenant Roth of the Swiss Cavilry, who is himself.

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The German correspondent in this number has sine to the motor wigons used in Germany for supply purposes. A resolution were employed in the imperial maneriars and as seed the work there was over the cars were despatched to the naxion of the 18th Corps.

The majority of the wagons were all stied to the 21st D. cs. of flows = 6 linsing cars 1908 pattern each with a trailer 2.1st (1908) with trailers; a first Damber for provision supply, and 1 sepattern Busing as a movable workshop, one Busing our sepattern Busing as a movable workshop, one Busing our sepattern Busing of the with trailers as reserves, and 2 notices for transmission of orders, etc.

The 6 Bosings and 2 Domilers, 1908 pattern, were used the ration supply with perfect success. They were all of the same persons to H. P., through a home geneous column, and had been every by the military authorities which subsidies dethe firms. The states of and red attention to 72 vehicles with two horses refer the supply of a devision to 16 vehicles will told. The same raid space speaks for itself. The average leads were 3.9 attents for way its and traders respectively. The piece was 10 to 2 In 19 to 12 yields) per hear. The columns went from the post depot to the troops and took in the day.

During the instruments on the 21st September cross started from horizontal and readed its troops 22 km. Its Section away in two hours. If then the word the course of them and was at the centres of our function before the troops who less were then uncerted and reached the depth of a access in estimated by publishing partitions and day. The new access to 175 for the publishing of the days wirk. On crossess a Pastig emiliars a constitute on the first part of the high its tark as a second partition of the matter of the days of the wirk extended from the formal substitution of the second partition of the matter of the day of the wirk extended from the first of the next notice.

The remaining the state with repeats the workship care property at the contribution of the first of the contribution was not to be a repeated in 12 hours by the two mercian the way in the first.

As an instance of handiness it is recorded that once a column of 16 vehicles was turned a half circle, when the space being very confined, each vehicle had to turn within a 10 metre (109 yds.) diameter. The operation was a complete success.

It is, however, remarked that in actual war it is very doubtful how long the roads would stand the wear and tear of these heavy

vehicles.

As far as a war between Russia and Germany is concerned, motor cars would be useless from the first, and for this reason Germany is compelled to provide for horsed vehicles as well as horseless.

#### ITALIAN PAPERS.

### Ro ista di Artiglacia e Genco.

The September number is mostly technical but are are Modern Means of Scouting and Information in Armes 1807 below.

The author points out the importance of a well organ and of intelligence. Whether in the phase of preparation of the deployment before active operations or in the battle itself of tion is a factor of the greatest consequence. And in no serie to action the extended fronts render the rapid and accurate the sign of all information a matter of paramount necessity. A mander can no longer embrace, the greater part of the hold of the in a single glance he is compelled to rely on reports results from very distant localities.

The system of exercising command from a point role to troops engaged was carried to its logical extreme by the discussion Mancharia, and its success was for the most part discussional cellent service of intelligence.

While on the other hand the defects in this branch, it is a were largely responsible for the Russian failures. A striking this consurred at Lagovang. Had Kuropetkan in that battle because Kurokin periods position on the 2nd and 3rd September the of the action and of the campuign might have been very different

The effect of dividing the large armost into related years tions, which is a consequence of the mostern extended positions a make it a necessity for the communications both from the headquarters and from the units to each other to be a large and reliable.

The author deceles the incides of internation into the parameters of observation. It means of correspondence a these of a mixed character.

(i) Merns of description —These are spaceately — — — — correpations recommissioners by exercised by less we had noticed to the second matrix as and last vitable of these the first two west some exercised have a limited rule of a contact their spaces. It was restricted by the power of the base at 1th these second transfer ment by stead more generally useful and are appeared to a sweeping adverse.

The free basis in appears to be the most exitated risks mitted general best an extinary belongered to many of the analytic day be of thought not to be a considerate on part at factorism the examined topic of the example to be a consideration.

type of dirigible promises well, but there are many disadvantages. The observer is much hampered by the oscillation of the car. Photography is usually impossible, and it is very difficult to find one's position on the map, so unfamiliar is the aspect presented by the country below. Captive balloons are therefore still the most serviceable means of observation though attended by numerous inconveniences and unmanageable in a wind of any force.

(b) Means of correspondence or communication—These must be numerous, accurate and rapid in action. The methods hitherto employed, viz., the horse, the carrier pigeon, visual signalling, the telegraph, and the telephone and photo-telegraphic apparatus are nowadays assisted by the bicycle, the motor car, the wireless

telegraph and the dirigible balloon.

The horse.—The comparative failure of cavalry in scouting in recent wars should not be taken to mean that the horse is no longer of any practical value in this regard, but rather to signify that cavalry, while employing orderlies for communication between relatively near bodies, as patrols, should have recourse to the telephone, telegraph, the cycle and the motor cycle to reach points further away.

Carrier pigeons have but a limited use in the field, from the difficulty of training them for service between moving terminal stations. Their employment is confined to communication with forts, etc. Optical telegraphy, with helio or lamp is not considered by the author to be of great advantage, requiring as it does considerable care and trouble in selecting stations, favourable atmospheric conditions, and a specially trained staff. The electric telegraph represents a safe and certain means of communication, rapid, continuous and capable of covering the greatest distances. The field army can be connected with the base and the army head quarters with the subordinate officers, etc. The existing telegraphs of the country can be used in conjunction with portable field systems. Bare or covered wires can be used as circumstances require, and the telephone used to supplement the telegraph. It is in fact proposed that the telephone should always be substituted for the telegraph in the field as being simpler and quicker. The author remarks that the danger of lines being tapped is in practice less than is generally supposed. For in addition to the many difficulties which attend the operation itself, nothing can be done without warning the operators at the extremities of the line, and moreover important messages are usually sent in some disguised form so that if intercepted they are valueless.

The bicycle or the motor cycle is perhaps the best makeshift for the electric wire. But if used a regular system of relay stages should be organised to obtain the full benefit of the arrangement.

Automobiles.—The progress made with self-propelled vehicles places at the disposal of the modern army a most convenient and erliable means both of transmitting orders, etc, and of enabling subordinate commanders to obtain personal knowledge of the situation at distant points, with celerity and certainty and without undue fatigue.

Which is they apply. This system appears to be particulated to in littly purposes in that the weight aid is material required is turness than with the ordardy to a secondarial with a such as grading, there are to a should be needed and thought many attempts have been a system has been in ented up to dide which will with a containty at such that the message trivels to one district the other. All the same the many advantages of the system has the power of communication with steps at a standard sessing adjunction the army of to day.

to Mars at all repented a matter at a let In this category is it must of a relayer are composed with a shape of dairy by he " ers or a rope in a heavy ters etc. I has greater tach in the possibilities of the direct generality of anth rives on the subject. He peristhe swhich the species of a rossel can true r by histhe proportions and first it as made in the one of during male set in weening the direction of newstense esting the probability in set community on the first campagn a cross to can at as the connecting oak to separated bedress especies of the admiss proceeds by on many moves and the value by the little of the spe diang and between a suffer to be trought of determining original to the advisor to be tracked as the ways that some or St. Progress to se when choose and probability of Policina 1998 and front and these open a service on assistant in H. been an discharge and the

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Another item of interest in this number is a proposal to use elongated bullets in shrapnel shell, started by the German General Wille. The idea is that an elongated bullet which can be made to rotate on its own axis will possess much higher velocity and therefore man-killing power when it leaves the shell than the spherical pattern; and that a larger amount of the space in the shell can be filled by the elongated bullets.

General Wille proposes two methods of making the bullets revolve on leaving the shell. The first consisting of making the core of each bullet hollow and provided with ridges. The bullets are then strung on spindles which are fixed in the shell in the direction of the longer axis. The spindles are formed with grooves in which the ridges on the bullets engage. The grooves are of screw thread formation, and when the shell bursts the spin is imparted to the bullets.

In the other system the interior of the shell is filled with a number of miniature rifle barrels. These are filled with bullets to

which they impart the rotation.

This is roughly the principle of the proposal. It remains to be seen whether the hoped-for results will be attained in practice.

### July-August 1908.

This number provides plenty of excellent reading. The article on the "Employment of Field Artillery and the Co-ordination of its Action with the other Arms" is continued. Another article to be noticed examines the "Reorganisation of Siege Parks," but is too lengthy for reproduction. A short summary of an article on the Japanese Artillery is, however, given below.

# EMPLOYMENT OF FIELD ARTILLERY AND CO-ORDINATION OF ITS ACTION WITH THAT OF THE OTHER ARMS.

The article commences with a review of the present state of the field artillery material, its employment and its organisation and concludes with a review of the rules, exercises, manouvres, etc., best adapted to bring about perfect harmony in the action of this arm with the others.

Theoretically the field equipment has attained something like perfection. There is a Q.-F. gun of great efficiency against animate targets up to considerable ranges, mobile, well protected by shields and well provided with ammunition; there is a light howitzer for use against light field works, trenches, etc., but sufficiently mobile, and finally there is a heavy howitzer with which the more important works can be attacked and yet is capable of following troops along roads.

The apparent excellence of this equipment is, however, greatly discounted by the very various opinions as to whether the gun should fire a heavier shell, or be made more mobile; whether the light howitzer should be capable of attacking powerful works or not; and similarly by speculations as to what exactly should be the end and aim of heavy artillery.

Answers to these questions were naturally sought in the recent wars but with indifferent success, from the fact that the equipment employed was itself out of date and insufficient.

### Employ.

The main lesson of the Manchurian campaign is a confirmation of the old axiom that the principal object of artillery is to prepare the way for the infantry, to second all its efforts and to accompany it with the maximum of energy throughout the combat, even to the

last decisive phase.

Against artillery preponderance of fire must be attained. To this end will contribute a powerful gun, a proper choice of the time for deployment and a judicious use of heavy artillery; the latter take advantage of their long range to cover the deployment of the field guns. Artillery should not be kept in reserve. The gun position should be carefully reconnoitred beforehand and chosen with a view both to the greatest effect on the enemy and to concealment. Indirect fire should be employed for choice, and opportunity taken to surprise the enemy with simultaneous fire from all the guns. The enemy's position should also be very carefully reconnoitred, and every effort made to induce him to disclose his guns. The Japanese frequently sent forward infantry to draw the enemy's artillery fire. When the enemy's guns have once been silenced a few batteries should be told off to watch for and quash any attempt to re-open fire.

Against infantry the field gun is usually most suitable, though when the infantry is sheltered in trenches the light field howitzer is

very useful.

Once the preparation for the infantry action is complete the artillery must accompany and support the former up and into the decisive phase. For this field guns are suitable while the heavy artillery attacks the hostile guns, which will inevitably re-open on the infantry assault, firing over the heads of their own infantry. The powerful shell and curved trajectory all combine to indicate the advantage of the use of heavy artillery for this work.

The employment of heavy artillery is in fact one of the most important problems of the day. The author considers that the main factor of difference between the heavy artillery and the field gun of to-day lies in the greater facilities for rapid and accurate ranging possessed by the former, and that to this quality are to be attributed such good results as were obtained with the indifferent

material used in the Boer and Manchurian campaigns.

## Organisation.

The author gives a survey of the systems of different armies. In Germany a division is given a brigade of artillery, that is, two 6-battery regiments. The battery has six guns. An army corps of two divisions has therefore 24 batteries (3 of which are 105 m. howitzers) or 144 guns.

In France an army corps has 92 guns (21 batteries of 4 guns, and 2 of 4 short 120m, guns or in future 105m, howitzers).

It is proposed however to increase the total to 144 guns.

In Austria the army corps has 108 guns and 24 howitzers. But it is proposed to raise the figure to 216 which, as the army corps consists of three and not two divisions, will bring it more on a

level with other armies. The battery has six guns.

The author then gives some remarks on the vexed questions of 4 or 6 as the most suitable number of guns for a battery. The Japanese used 6-gun batteries in the war, except in the case of Q-F. captured guns which it is said were organised in 4-gun units. The Russian 8-gun battery with two captains lent itself readily to use in 4-gun units, and was so employed very frequently.

The Germans have at present retained the 6-gun organisation. but there is a considerable feeling in favour of the 4 gun system; and it is believed that if the French total of guns in the army corps is actually raised to 144 while the 4-gun battery is retained, the Ger-

mans will adopt the 4-gun system.

The French are firmly convinced of the superiority of their organisation, as being more manageable and more adaptable to the

After some details of the heavy artillery in the German, French and Austrian armies the author proceeds to the technical action of artillery with the other arms. He prefaces his remarks by observing that the necessity for complete harmony of action between all arms has always been paramount and is nothing new. He gives instances of the disaster which follows failure to observe this axiom as at Saint Privat where the Prussian artillery dislodged its own infantry from the village.

First, during the artillery preparation the infantry must advance at any sacrifice first to draw the fire from the enemy's guns and then to take advantage of the fire of their own guns. A bombardment

without an advance is waste of ammunition.

Next, when superiority of fire is established, the infantry must take up a fresh and advanced position, while the artillery continues to give its support.

A very close connection must be maintained between artillery

and infantry especially when the former fires over the latter.

When the decisive phase arrives the artillery harmonises its fire with the infantry advance, and the fire should be increased to the maximum and continued over the heads of the infantry until the latter have arrived within 300 m. of the enemy. The enemy should be compelled to keep under shelter, and reinforcements should be prevented from coming up.

On the defensive absolute concord of action is, if possible, more imperative than in the offensive. The artillery positions should be so well concealed that the attacker cannot see any vestige of the guns, and the infantry must be in effective support. Some guns will be brought up when the attacker makes his final assault to batter the assaulting columns up to the last minute, but this movement of guns is only practicable if the infantry give sufficient protection.

The remainder of the article discusses the peace training best suited to bring about the concerted action advocated.

### The Japanese artillery in 1908.

Organisation.—One regiment for each of the 20 divisions of the army. One regiment consists of 4 batteries divided into 2 groups. A battery has 6 guns, 6 wagons and 1 cart, teams of 6 horses. Also in addition:—

Three independent field artillery brigades each with 2 regiments of 6 batteries.

Three independent mountain artillery battalions of 3 batteries each.

Two brigades of heavy artillery; 2 regiments each.

Two independent regiments and 6 independent battalions of

heavy artillery.

One regiment=3 battalions of 3 companies or batteries. Independent battalions vary. The heavy artillery is intended to be used partly as fortress artillery and partly as heavy field artillery. These batteries are stationed in Formosa, Korca, etc., as well as in Japan itself.

There are four schools of instruction for officers, the staff college, the artillery and engineer school, and the schools of gunnery for field and heavy artillery.

Equipment.

(a) 75 mm. (2.95 in.) Krupp guns.

(b) Osaka built guns on the 75 mm. model and from imported material.

(c) 75 mm. Arisaka pattern guns manufactured at Osaka. The gun is 30 calibres in length, range 8,500m. (9,295 yds.) muzzle velocity 520 m. (568 yds.), weight in battery with shield 900 kg. (1,984 lbs.), weight of shell 6.5 kg. (14 lbs.), number of bullets in shrapnel 210.

There are about 700 guns of the first two patterns, but few of

the last.

The sighting gear has a Zeiss prismatic telescope magnifying 3 diameters. The graduations give 6,200 m. (6,583 yds.)

Fixed ammunition is used; the projectiles are shrapnel (3) and

high explosive shell  $(\frac{1}{3})$ .

Fuzes read to 7,900m. (8,639 yds.), 5 rounds a minute is considered the normal maximum rate of fire (though the gun is capable of more).

The mountain material at present is the old rigid equipment used in the war. But it is proposed to introduce a long recoil

carriage.

The heavy artillery have the 105 mm. (4·1 in.) gun, and the 120 and 150 mm. howitzers (4 7 and 5·9).

The former is of Osaka manufacture and has a long recoil carriage, with an 8 horse train. The main data are—length 30 calibres, muzzle velocity 540m. (589 yds.), sights graduated to 7,800m. (8,529 yds.), maximum range 12,000m. (13,123 yds.), weight of shell 18 kg. (396 lbs.), weight of gun in battery 2,250 kg. (4,960 lbs.), rate of fire 4 rounds per minute. The wagon carries 36 rounds.

The 120 mm. gun is partly Krupp and partly Osaka built. It is 10 calibres in length, initial velocity with No. 1 charge 291 m. (308 yds.), sights graduated to 5,680m., weight of piece 451 kg., projectile 20 kg., burster of high explosive shell 5 kg. The limber

carries 16 rounds, the wagon 32.

The 150 mm is also of composite build. It is 11 calibres in length, initial velocity with No. 1 charge 290 m. (307 yds.), sights graduated to 5,890 m. (6,440 yds.), weight of projectile 36 kg., weight of high explosive burster for shell 8.5 kg. The limber carries 12 rounds, the wagon 24.

For siege parks a 210 mm. gun and a 1.25 cm. machine gun

are proposed.

In the coast armaments various natures of guns are actually employed including mortars of 90, 150 and 240 mm., howitzers of 90, 105, 120, 150 and 280 mm., and guns of 90, 105, 120, 150, 190 240 and 270 mm. But in future only the 150 mm. Q.-F., the 270 and 305 mm. are to be used. Disappearing mountings are general.

Machine guns.—1,200 were ordered from the Hotchkiss firm in 1907. The pattern has been modified in accordance with the experience of the war. Shields are abolished, as being of little use and heavy. The gun can be traversed round the whole circle The firing arrangement can be made fast with a spring hook to continue fire automatically.

The mountings for all arms are of tripod pattern and are carried

on pack horses.

A battery of 6 guns is allotted to each infantry regiment. A cavalry brigade has an 8-gun battery, which can be divided into two half batteries.

Hand grenades.—The Japanese have a hand grenade consisting of an iron tube 15 cm. (59 in.) long and containing 90 grammes of explosive. It has a wooden handle by which it may be thrown.

Factories, etc.—The most important are the Tokio and Osaka arsenals; the former manufactures rifles, swords, etc., ammunition (10,000 rounds per diem), bicycles. etc.; the latter manufactures guns and artillery material (using steel ingot obtained from Krupp and Creusot) carriages, torpedoes, etc.

Itabashi and Meguro are explosive factories for cordite, etc. Shingawa makes the Shimose powder, Ujji is an explosive factory as an annexe to Osaka, and Moji is a repairing establishment for arms.

carriages, etc.

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### ALGIERS.

## Some Notes on its History and Conquest-

By Captain C. E. D. Davidson-Houston, 58th Rifles F. F.

The conquest of Algiers is of particular interest to Englishmen, since it enables a comparison to be made between our own methods and difficulties in conquering India and those of the French in Algiers.

Before going further a few remarks on the country itself and its

general features are necessary.

Algeria is composed of three provinces, Algiers, Constantine and Oran, covering roughly an area equal to twice that of Great Britain and Ireland; the Algerian Sahara province, to the south of Algeria proper, and about one-third of its area, has more recently been brought under French rule, but as the history of its conquest is outside the scope of this paper, we will leave it with this mention of its existence as a 4th division of the Algerian possessions of France. Algeria is counted an integral part of France.

The coast line is about 625 miles long but has few good ports, though the French at considerable expense have made Algiers one.

The country may be divided into three distinct regions:-

1. In North—Somewhat hilly with a fertile belt from coast to Lesser Atlas Mountains.

2. Middle-Mountainous tableland containing many brackish

lakes and marshes (" Shotts").

3. In South—Algerian Sahara with its oases. The general trend of the mountain ranges is W.-S.-W. to E.-N.-E. with strips of fertile land between them, much as one gets on the N.-W.-F. India. Kuram, and Tochi, etc.

The mountains average 4,000 to 5,000 feet with peaks running up to 7,000 or 8,000 feet.

The tableland (2) after the winter rains forms the great grazing

ground of the country.

The French have done splendid work in planting and sinking artesian wells, so that vast, previously desert, tracts are now covered with corn and vines, fruits and vegetables much of which, being surplus to requirements, is exported, and a fair proportion finds its way to England. It may be remarked that 95 per cent. of the acreage, occupied by the agricultural population, is in the hands of Europeans. With regard to the military forces employed in the country, a comparison with those of India is very interesting. In Algiers 13 per cent of the population are Europeans and the strength of the army of occupation (including  $\frac{2}{3}$  European and  $\frac{1}{3}$  Native troops) bears the relation of 1 to 80 of the population.

In India about 1/3 per cent of the population are Europeans and the strength of the army to the population is as 1 to 1,000, while the proportion of European to Native troops is reversed.

This disproportion strikes one as very remarkable, but the causes

are not far to seek.

1. The proximity of Algiers to Europe, with its possibly hostile Powers, capable of landing large forces in a comparatively short time.

2. The mass of the population being of one religion, and capable therefore of combining against a common foe more easily.

3. Nearly one-third of the European population is non-French

and might join an invader from the country of their birth.

4. The French no doubt appreciate the advantages of Algeria as a training ground—one complete European Army Corps being stationed there. It must be remembered too that the French used their Turkos (or Tirailleurs Algeriens to give them their correct title) in the Franco-Prussian War; so that Algeria may be looked

upon as a recruiting ground for their army.

In order to understand what brought the French to Algiers originally, we must dip into history. Towards the end of the 15th century the Moors were driven out of Spain by Ferdinand and cettling on the African shores of the Mediterranean, immediately started piracy as their regular occupation. Several fairly flourishing pirate cities were established which the Spaniards, partially out of hatred for their late masters and partially in hopes of booty, attacked and held against their founders the Moors. The Spaniards were not long left in possession of their captures. The brothers Barbarossa, renegade Greek adventurers, owning allegiance to Turkey, if their extreme independence can be called such, arrived on the scene at the head of a pirate fleet, nominally to help one of the Moorish Emirs against Spain. They saw that the Algerian port would be a suitable place for depositing their loot and repairing their ships, and as the nature of their "business" did not admit of foreign authority in their ports, they entered with zest into the war against the Spaniards and in four years had driven them out of Algiers. However, being diplomatists

as well as pirates, they saw that their position would be immensely strengthened by placing themselves under the patronage of some powerful ruler, who would not enquire too inquisitively into their methods and manners of life in Algiers. The Sultan of Turkey answered their needs and a mission was despatched with presents to the Sultan and promises of more, if he would take them under his protection. In this way the suzerainty of Turkey over the Barbary States had its origin. This suzerainty has never been much more than nominal—as indeed the Barbarossas intended it should only be—for they reigned as independent and absolute rulers and their successors continued the practice—indeed went further, for the Barbarossas were called "Pashas by the grace of the Sultan," their successors took the titles of "Dey" (or Patron).

An interesting point concerning the rule of the Deys is that no one except Turks, Levantines or renegades to one or the other were employed by them in the army or any office whatsoever, and at first children whose fathers, though of one of the above classes, had Arab wives were not even employed.

When crises arose however these half breeds were formed into a sort of militia, the "Coulouglis," and to them were added contingents of the more warlike subject tribes; and latterly the Kabyles, who had never been conquered by the Turks, were allowed to join in the expeditions against the Arabs of the plains, and paid themselves out of the loot they obtained.

One of these Kabyles tribes, the Zouaona, gives us the name Zouave of which there are several regiments in the French service. The name is now a misnomer as the Zouaves are all Frenchmen. When originally raised, however, about 1830, they were mixed regiments of French and Kabyles in certain proportions—Officers, Non-Commissioned Officers and men. The experiment however proved a failure and the Kabyle element was eliminated; since it was found that the differences of religion, education and mode of thought made all attempts at close comradeship impossible. Yet the circumstances were peculiarly favourable for the trial was extended over seven or eight years, most of them spent on active service during which many fierce engagements were fought. In spite of this it proved a failure, and the Kabyles were turned into Tirailleurs and employed, as I mentioned in the beginning of my lecture, in the Franco-Prussian War. This experiment and failure is particularly interesting to us here in India in view of the problem always before us of the higher employment of natives, in the army more especially. But to resume. For three centuries, after the Spaniards were driven out of Algiers, these pirate States were a curse and a terror, not merely to the neighbouring coasts of the Mediterranean, but also to the Atlantic coasts and even the North Sea and Baltic, and in 1627 one of their expeditions actually ravaged the coast villages of Iceland. These pirates were not content with capturing ships and their cargoes but carried off inhabitants, male and female, whom they sold as slaves, put to row their galleys or threw into prison, pending ransom—in fact

they did with their prisoners pretty much as they liked. The general apathy of the Christian States of Europe is astounding. Too much of their energy was being expended on fighting each other, but that hardly accounts for the almost utter indifference to the sufferings of their countrymen who happened to be captured by the Corsairs. Various expeditions from time to time were sent to punish the Algerians, some successful, many very much the reverse. But as the former were never pushed to their logical conclusion, by obtaining proper guarantees of future good behaviour, their effect, if any, was but transitory. Louis XIV towards the end of the 17th century sent a number of expeditions, and after capturing and burning Algiers three times in six years brought the then Bay to reason, so that the latter on his own initiative sent an Ambassador to Paris to ask forgiveness, promising in the future to abstain from capturing French ships or selling Frenchmen as slaves. Although this promise was not strictly carried out still the French received a proportion of the immunity from attack which the terms of the treaty gave them on paper, and, strange as it may seem, they considered themselves and were considered by other European nations as very fortunate. To obtain parallel in these days we must imagine, let us say, Liberia fitting out piratical vessels and harrying, not merely the English coasts, but every coast it could reach in Europe. How long would Liberia exist as a State, we wonder; and yet we see the spectacle of all Europe standing impotent before a few thousand ruffians for 300 years. The remedy was not a difficult one to administer. There were no lengthy land campaigns to be undertaken in a difficult country. The capture of a few coast towns and the destruction of the fleet of Algiers was all that was required to render the pirates powerless.

The understanding with France continued up to the time of Trafalgar, but after that battle the Deys allied themselves with

England whose sea power they feared.

Piracy increased enormously, so much so that Napoleon planned an expedition against Algiers, and in 1808 had a careful survey of the coast made secretiy by an officer of engineers, who furnished also an elaborate report, embodying landing places, forces necessary, marches, etc. But the state of the continent prevented Napoleon carrying out his intention and the report was pigeon-holed for 22 years.

On the declaration of peace in 1815 France got back her establishments at Calle, which she had since 1518, and for the privileges of exclusive rights of sponge and coral fishing paid 17,000 francs annually to the Dey. In 1819 however the Dey Hussein demanded 200,000 francs which were paid to him. He then proceeded to grant similar concessions to other countries, while demanding from France alone this large payment. France naturally protested and refused to pay—the Dey retaliated by burning the French factories at Calle in 1826. This act was in itself a sufficient casus belli, coupled as it was with renewed activity in what we may call the staple trade

of Algiers 90 years ago, viz., piracy. There were other causes however. During the period of the Directory (1795—99) in France, large quantities of corn had been bought by them from Algiers, and had been paid for in paper money. The Empire and afterwards the Restoration (Louis XVIII, 1814), while accepting the principle of the liability, questioned the amount, the Dey demanding 14,000,000 francs, the French offering one-half. A deadlock arose through the French merchants, who were large creditors of the Algerian State, opposing any payment, until their own claims had been deducted.

The next move on the Dey's part was to blame, rightly or wrongly, the French Consul at Algiers for the failure of the negotiations, and relations became very strained till the crisis was reached on 27th April 1827. On that day, the Bairam festival, the Consul, in spite of the many previous insults he had received, went to the durbar of the Dey to present his "compliments of the season." As soon as he appeared, however, the Dey saved him the trouble of making any flattering remarks, by hurling a flood of the most up-to-date Algerian Billingsgate (and we can imagine it was a picturesque performance) at the head of the unfortunate Consul. The Consul, however, had a supply of invective apparently not inferior to the Dey's own. The latter springing from his chair of state rushed at the Consul, beat him with his fan, and drove him out of the palace.

War was declared, but for two years owing to the divided counsels of the French, it took the form of a naval blockade. The Corsairs were driven into their ports, but were not followed up. No landings took place, and as was natural no impression was made on the Dey or his people, and about 20,000,000 francs were wasted in this futile manner. It reflects little intelligence on the French opposition, for it was they who through jealousy of the monarchy prevented a more active form of warfare, that after two years of this useless blockade they could imagine that the Dey would accept any terms except his own. Nevertheless unwilling as they were to throw themselves whole-heartedly into a war which, if successful, would tend to strengthen the monarchy in France, they determined to send a flag of truce to try and arrange terms.

The French representative was received by the Dey, who refused all suggestions of compromise and dismissed him with threats. As the Dey was quite capable of carrying out his threats in spite of the flag of truce, the Frenchmen hastened on board their frigate which immediately got under weigh; but before getting clear, the forts of the town and harbour opened fire on the ship which escaped with difficulty.

This flagrant treachery united all parties in France and it was unanimously determined to put an end once and for all to the Dey and his rule. But before the expeditionary force was mobilised, the French Minister, Polignac, approached Muhammad Ali of Egypt as to what he would require in return for attacking Algiers. The price proved too heavy and nothing came of it; Polignac exchanged views with the neighbouring Muhammadan States. Tunis agreed to

observe neutrality, Morocco was only too glad to have Algiers humbled, and Tripoli sat on the fence. Turkey was engaged in a Russian war and had too much to think about. England endeavoured to restrict France to chastising without annexing Algiers, and suffered the usual penalty for meddling in other people's business by

being snubbed.

Polignac, replying to the demand of Lord Rothesay, the English Ambassador, for a reply to the last note, said: "Tell your Government, my Lord, that you have presented the note and that I have not read it." One must remember, however, that the dread of French aggression had not died away. Waterloo was not 15 years old, and what appears to us now as an uncalled-for interference in the affairs of an independent State, was then considered as a necessary act. One has only to read the contemporary literature of that period fully to realise the fear and hatred in which the French were then held.

On 31st January 1830 it was decided to send an expedition consisting of 37,000 troops, 27,000 sailors and 4,000 horses under the command of General Bourmont who had seen much service in the Napoleonic wars. Subordinate to Bourmont was Admiral Duperré who commanded the fleet which escorted the transports. It was not till 11th May that the embarkation was attempted; the flotilla arrived off the Algerian coast on 31st May, but owing to a gale had to stand off again. On the 18th June the troops were at last landed—4½ months after war had been decided on, and nearly 11 months after war had become a certainty through the violation, by the Dey, of the French flag of truce.

Even allowing for the lack of railways and the consequent delay in collecting the necessary war stores and the difficulty in securing sufficient transports, of which nearly 600 were required, the mobilisation seems to have been carried out very slowly. No attempts appear to have been made to gain fresh information about Algiers, although there would have been ample time during the months of mobilisation. Owing to this neglect the cavalry of the expedition numbered only 500 sabres and the mobile artillery only 5 batteries, as it was believed that little or no forage would be obtainable in Algiers—an error which bore fruit later. It is strange that the French, who must have known that horses were common in Algiers and constituted the usual mode of locomotion, should have imagined fodder would be so scarce that the mounted arms must be reduced to vanishing point. In default of any later information, the report of 1808 was the one acted upon, and was on the whole found satisfactory. The troops were landed on the small Peninsula of Sidi-Ferruch, about 13 miles west of Algiers. The operation was unopposed, for the Dey had pointed out to his followers that "in order to capture the French, we must let them land first"-a true enough statement of course as far as it went, but from a military point of view a particularly foolish one in this instance. Apart from the spirit of conceit, however, the Dev had several historical

instances which very possibly encouraged him to pursue the tactics. The Emperor Charles V in 1541 landed with 25,000 men to capture Algiers, but a frightful hurricane on sea and land ruined him, so that he barely managed to escape with a mere remnant of his army. The first attempt of Louis XIV to coerce Algiers met with little better result as the expeditionary force had to re-embark in a hurry leaving their guns and stores in the hands of the enemy. The present Dey, however, was not to have any such fortune. From 14th to 18th June the French while waiting for the arrival of the siege train, draught horses and reserve stores, which were still on the high sea, strengthened their position on the Peninsula, closing the landward side with strong works, thus transforming it into a safe base for their stores, sick, etc. The Dey's forces occupied a plateau facing the Peninsula, and expecting to be attacked had entrenched themselves. Ibrahim, the Commander-in-Chief of the Dey's army, had some 45,000 men under his command. As the days passed and the French remained busy in their camp, Ibrahim became afraid that his prey would escape him by re-embarking, so on the 19th of June he left his entrenchments and attacked the French, trying to turn both their flanks; he was repulsed and retired to the plateau, his centre falling back when the wings retreated. Bourmont, the Commander-in-Chief of the French, took up the offensive vigorously, his right penetrating to the Algerian camps. He hoped now by swinging round his right to drive his foe into the sea, but his left failed to support the right, so that movement had to be abandoned. The enemy fled in disorder along the road to Algiers, but there was practically no pursuit through lack of cavalry. The French loss was about 500.

We have seen how the delay, in advancing after the disembarkation, emboldened the Algerians to attack, and how the lack of cavalry prevented their defeat being turned into a disastrous rout by the French. These however were not their only results, for five days after their defeat at Staoueli the Algerians were back again harassing the French outposts; and on the 25th and 28th June fierce assaults were made which cost the French more than the 500 casualties they had at Staoueli and rallied to the Algerian army all the wavering tribes, who quite misunderstood the inaction of the French. Our own Afghan wars furnish us with similar object lessons. So serious were matters looking that the French General requested that the Reserve division, mobilised in France, might be sent to him. At last on 28th June, 14 days after the army had landed, the expected fleet arrived with siege artillery, etc.

The following day the French army marched on Algiers, leaving its camp at Sidi-Ferruch in charge of the navy, much to the disgust of Admiral Duperré.

During the march, the arrangements were utterly thrown out of

gear by an optical illusion.

The General and his staff, mistaking the Plains of Matidgia for the sea (one has often seen a similar mirage in the Suez Canal), and 280 ALGIERS.

distrusting Boutin's map which, as it happened, was perfectly correct (Boutin was the officer who had made a Survey Report for Napoleon

22 years before, thought they had over-shot Algiers.

Orders were accordingly issued by which it was intended to remedy the imaginary error, but the result was hopeless confusion, for the army was marching in a very broken country ir three columns, and these orders for countermarching reached them at different times. Soon afterwards the initial mistake was discovered, and fresh orders were issued to resume the original line of advance making "confusion worse confounded." It was not till late at night that the French arrived before Algiers, having taken some 16 hours to cover the distance of 12 miles. Fortunately for them, the Algerians had all retired on Algiers, or a very serious disaster might have occurred.

The Algerians, accustomed to attack from the sea alone, had lavished their means for defence of the city on the seaward side, while neglecting the landward approaches. The French spent four days only on preliminaries, during which the fleet bombarded the sea-defences of the town with but small result. At daybreak on the 5th day the siege batteries opened a heavy fire on the town; by 10 A.M. the Algerian stronghold was a heap of ruins and by the afternoon the Dey Hussein had asked for terms, which were, shortly, the handing over to the French of Algiers and its forts, treasury, navy and all public property, and the deportation of the Dey himself from the country; the terms were accepted and on 5th July the French took possession of the town, and a few days later Hussein and his family were taken to Naples. His Janissaries, called the "Odjak," were disarmed and shipped off to Smyrna; the Beys of Oran, Tittery and Constantine made what terms they could with the French. In short, Algiers, after being for three centuries a scourge to Europe, ceased to exist as an independent State. About £2,000,000 were found in the public treasury and helped to pay for the expedition. Bourmont was created a Marshal of France, but his happiness was short-lived; a small expedition he sent to place the Tricolour at the foot of the Atlas Mountains was forced back by Kabyles and Algerians who no longer feared their new masters as they did the Dey's Odjak, and the Bey of Tittery at the same time declared war. Added to this came news from France of the fall of the Bourbon dynasty, by the deposition of Charles X, and the rise of the Orleanist power, in the person of Louis Phillippe; Bourmont's first idea was to transfer his army to France to help reinstate Charles X. However on approaching the Admiral Duperré, the latter, who had not forgiven Bourmont for handing over the charge of the camp to the navy, refused all assistance from the fleet. The General therefore submitted to the orders of the new Government, and on 3rd September handed over command to General Clausal and went into exile. Thus ended what may be called the 1st scene of the drama "The Conquest of Algiers."

There are some points connected with these earlier operations of the French in their conquest of Algiers that claim some notice. We see how a mirage upset the calculations of the General during the advance on the capital, and can imagine how an enterprising foe

might have reaped advantage therefrom.

The action of Staoueli is interesting and instructve. We see that the delay, after the landing had been effected, nt only gave time for the enemy to collect but also encouraged them in the belief that the French were afraid to advance. Eventually, it is true, this idea proved of advantage to the French, inasmuch that it drew the Algerians from their entrenchments to an attack, and had the French had cavalry to follow up the enemy after his defeat very great results might have been attained. As it was, however, the latter escaped after comparatively light losses, when they might have been destroyed. A really heavy blow struck at the commencement of the campaign might have had very far-reaching results. The Algerian army consisted of contingents from nearly all the fighting tribes of the country and had these been made to feel the power of the French by suffering heavily, they would have carried the news far and wide among their fellow-tribesmen and years of guerilla warfare might have been I sav "might" for history can give instances both for and against this supposition.

### 9th (Secunderabad) Divisional Essay, 1908-09.

### CAMPAIGN OF 1759.

# By Captain C R. Bradshaw, p.s.c., Brigade Major, Bangalore Infantry Brigade.

It is proposed in reviewing this campaign, to commence with the actual course of events, outlining the main features, by quoting extracts from the best authorities on the subject, and only discussing in greater detail those facts from which instruction may be derived, and then in conclusion to comment on the campaign and deduce its lessons, few though they may be.

No campaign is so remote but that it contains valuable lessons, and the principle underlying all campaigns remains the same, though

their tactical execution alters with the weapons available.

As is well known, Napoleon did not despise the campaigns of Hannibal and Cæsar because of their antiquity; but studied them deeply. Similarly our British campaigns of the past and preceding centuries, which are so peculiary British, being the operations of sea and land power in combination, are specially deserving of more attention than they get nowadays in the face of larger modern campaigns which are fought under conditions to which we can never hope to offer a parallel.

As the campaign of 1758 was a prelude to that of 1759, and as the latter campaign was a fulfilment of the general plan on which that of 1758 was based, it is necessary to touch on the results of the for-

mer, in order to comprehend the latter.

The operation which Pitt had in 1758 directed against Canada with a view to its conquest had been three-fold.

(i) Louisburg to be seized by a force under Amherst to give

access to the St. Lawrence.

(ii) An advance under Abercromby to be made upon Crown Point and pushed forward, if possible, to Montreal and Quebec.

(iii) Another column under Forbes to capture Fort Duquesne and gain command of the Ohio waterway.

At the close of the campaign the situation was as follows :-

(i) Louisburg had been captured, and as a consequence Cape Breton and Prince Edward Isle passed under British rule, thus opening the seaway for British ships up the St. Lawrence.

(ii) The force under Abercromby had been severely defeated at

Ticonderoga.

(iii) The column under Forbes had reached Fort Duquesne which the French had blown up without defending, thus surrendering the forts of the Ohio and severing their communication with their comrades in North America. Forbes also succeeded in alienating some of the most powerful tribes of Indians from the French.

The situation of the French conversely was as follows:—

In the centre Montcalm held his own and his troops were elated after their triumph at Ticonderoga, but the left had been forced back by the capture of Louisburg and the right by that of Fort Dequesne, while the Indians were turning against them.

This campaign paved the way for Pitt's plans in Canada, where

in 1759 he intended to make his greatest move against France.

His scheme was as follows:

(i) A direct attack upon Quebec by way of the St. Lawrence under Wolfe with 12,000 men.

(ii) The renewal of an attempt to penetrate up to Montreal and Quebec by way of Ticonderoga and Crown Point, under Amherst in command of 12,000 men, with orders to relieve Pittsburg, and moving northward to create a powerful diversion in Wolfe's favour, if actual co-operation could not be carried out.

Amherst was also instructed to undertake any further operation he considered advisable without prejudice to the main object of the campaign.

The above advances were to be simultaneous.

The plans by which Pitt hoped to gain his object having been explained, it is now necessary to consider those of the enemy and examine the other factors which affected the situation.

On the French side, the victory at Ticonderoga had aroused the jealousy of Vandreuil, the Governor, who endeavoured without avail to obtain the recall of Montcalm, being ordered in return by the French Colonial Minister to refer on all questions of war or of civil administrations bearing upon war to Montcalm, thus inaugurating the dual responsibility which proved so fateful eventually.

Besides the secession of the Indian tribes, the Canadians were now beginning to lose courage, while the condition of Canada itself

was deplorable.

The St. Lawrence was watched by British troops, the harvest was meagre, flour was at famine prices, and the cattle and most of the horses had been killed for food.

Troops, arms, munitions, and food were required as well as ships to defend the mouth of the St. Lawrence, and an urgent appeal was accordingly made for them to the Court in France.

The reply was the direct converse of the action of Pitt in the case of the British Expedition, and was to the effect that it was necessary to concentrate all the strength of the Kingdom for a decisive operation in Europe, and that the aid could not be sent to the amount reguired The want being partially supplied, however, with

three to four hundred troops, arms and ammunitions, together with enough provisions, to supplement the supplies brought over by a contractor, CADET, to carry the Colony through the next campaign.

The despatches bearing this news contained at the same time the general idea on which the Governor and Montcalm were to base their plans for the defence of Canada, the substance of which can best be

gleaned from the following extracts:-

"As the English are expected to turn all their force against Canada and attack you on several sides at once, it is necessary to limit your plans of defence to the most important points and those most closely connected, so that each part may be within support from the other. However small may be the space you are able to hold, it is indispensable to keep a footing in North America, if once we lose the country its recovery will be almost impossible."

"We will save this unhappy Colony or perish" is recorded as the answer of Montcalm. And he set about carrying out his instructions

forthwith.

As it was believed in Canada that the English could muster 50,000 men for the attack, Vandreuil caused a census to be made of the Government of Montreal, Three Rivers, and Quebec. The return showed some 15,000 men, of which 3,500 were troops of the Line, 1,500 Colony troops, a body of Irregulars in Acadia, the Militia, couriers-de-bois of Detroit, and only about 2,000 Indians who could be depended on.

Great as was the imagined disparity of numbers, it was hoped that the centre of the colony could be defended. For the enemy's avenues of approach were barred by the rock of Quebec; the rapids of St. Lawrence; and the strong position of the Isle Aux Noix at the outlet of Lake Champlain. It was this last avenue of approach

which was most dreaded by the French.

Montcalm had long inclined to the plan of concentration enjoined on him by the Minister of War, but Vandreuil insisted on occupying Acadia and the forts of the upper country.

These orders were given effect to as follows:—

Bourlamaque with Regulars, Colony troops and Indians, totalling 3,400, was ordered to Ticonderoga and instructed to fall back to Isle Aux Noix only if overwhelmed.

La Corne was entrenched with a detachment of 800 Regulars, at the head of the rapids of St. Lawrence, with a view to opposing

any hostile movement from Lake Ontario.

Three armed vessels were built for the defence of Lake Champlain, and Regulars and Militia were kept in constant work, repairing all fortifications.

A hostile advance by the St. Lawrence was not considered practicable owing to its dangerous navigation, which was further increased by the removal of all buoys and navigation marks; but when the news of the despatch of the English Fleet reached Montreal, Montcalm and Vandreuil hastening there, drew in the armed force of the Colony, with the exception of the detachments mentioned above.

The total amounted to from 12,000 to 14,000 men all included. Before going further, it is necessary to touch on the characters of the opposing commanders; for the conduct of an operation, truly reflects the characters of the leaders, be they weak and vacillating, or energetic and bold, and this campaign is no exception to the rule.

Vandreuil, the Governor, was a Canadian by birth, and was very envious of France and its Regulars. He lacked force of character and decision in time of crisis, and his conduct in the campaign was marked by his excessive egotism and his jealousy of Montcalm, which resulted in hampering his colleague to such an extent that it is said that the loss of Quebec can rightly be ascribed to him.

Montcalm was a good leader of men, had distinguished himself in Europe, and was governed by an ardent loyalty to his King. He was impetuous and vivacious and his volubility sometimes outran prudence, which tendered to widen the breach between him and Vandreuil. He was beloved and trusted by the soldiery and the people of Quebec.

Wolfe.—The character of Wolfe brings to mind that of William of Orange; the force of a great mind carrying and driving onward a feeble body. Though young in age—33—he had seen much service and had been chosen from the bottom rung of the list of colonels to command the army in Quebec. He was a strict disciplinarian but was loved by his men. Reverses served only to rouse his energy.

He is described as ardent and laborious, daring and provident, practical and studious, pertinacious yet reasonable, dignified in com-

mand, and docile in obedience.

Amherst was an average methodical soldier and had distinction in the reduction of Louisburg in 1758. He was indefati-

gable and hardworking, but lacked military foresight.

The operations of the force under Amherst will only be briefly dealt with, as its effect on the main result of the campaign was not great, but a knowledge of the trend of events will throw greater light on the conduct of the struggle before Quebec

Taking advantage of the latitude allowed him by Pitt, Amherst determined to add the reduction of Niagara to the enterprises allot-This duty he assigned to Prideaux with 5,000 men, ted to him. while Stanwix was entrusted with the relief of Pittsburg. two operations to be conducted in combination, for it was intended that while Prideaux was engaged with Niagara, Stanwix should push on against the French posts on Lake Erie and thence on Niagara, thus relieving Prideaux for an advance to the St. Lawrence.

Prideaux was the first to take the field; starting from Schenectady on the Mohawk River in June, he moved viâ Lake Oneida to Oswego, having left a strong garrison to guard the Great Carrying

At Oswego he left nearly half his force under Colonel Haldimund to secure his retreat, while he embarked with the remainder on the lake for Fort Niagara, which was defended by 600 French. Siege works were at once opened during which Prideaux was accidentally killed.

Sir W. Johnson who had joined the force, with a party of Indians, took command, and pushed the siege with such energy that the fort was reduced to extremity. At this junction 1,300 French Rangers and Indians appeared for the relief of Niagara. Johnson rose to the occasion, and leaving a third of his force in the entrenchments, sallied forth to meet the relieving force. After a sharp encounter his bold action was rewarded, and the enemy routed completely. The survivors, burning Venago and other posts on the lake, retired to Detroit. Niagara surrendered the same day. Thus by July 24th, at a stroke the whole of the region of the Upper Ohio was left in the hands of the British, and the French of the west cut off from Canada, while the route to Montreal by Lake Ontario was opened.

Gage meanwhile having succeeded Prideaux, led his party against the French post of La Galette at the head of the rapids of the St.

Lawrence.

Amherst had assembled his army of 11,500 at the head of Lake George at the end of June, but it was not till July the 21st that his

troops embarked en route for Ticonderoga.

The French, 500 strong, under Boulamaque held this fort till 26th July and then abandoned it, previous to acting similarly at Crown Point, from whence a retirement was made on 1st August to the Isle Aux Noix at the northern extremity of Lake Champlain.

Amherst was now brought to a standstill, for the French had four armed vessels on the lake, and he had to build some for himself

to protect his flotilla before he could advance.

He set about the work at once, but concurrently with the erection of a strong fort at Crown Point, for which the majority of the wood cut in the sawmills was used. He began too late as he had made no provision for this eventuality, when waiting at the southern end of Lake Champlain. The vessels were not ready till the middle of September, when the season was too far advanced for further operations.

In fact, by the middle of August, the campaign of the force in the south and west was actually closed, as Gage, too, had stated that the French force opposing him was greater than his own, and

he feared to attack it, playing for safety.

Amherst's advance up to Crown Point had, however, so alarmed Montcalm that he detached one of his best officers, Lévis, to superintend the defence of Montreal.

Gradually, however, in proportion as Amherst's inaction was prolonged, so the French regained confidence, and discouragement fell on the British.

Wolfe left England in February, but after many delays, it was June before the armament and men for the reduction of Quebec sailed from Louisburg.

He had been led to expect 12,000 men, but owing to sicknes

during the winter, the troops only mustered 8,500 men.



The quality, however, was excellent, and the Brigadiers chosen to serve under Wolfe-Monkton, Townshend and Murray-were men of youth, energy, and talent. Leaving him en route it is proposed to review the situation on the French side.

As mentioned above, the French, having been thrown into consternation by the news of the intended advance by the St. Lawrence, hastily called in regulars, militia, and Indians, to the total of some 14,000 men for the defence of Quebec, and Montcalm decided on his scheme of defence, which was based on the configuration of the banks of the St. Lawrence in the vicinity of the city.

Quebec stands on a rocky headland, which marks the contraction of the river from some 20 miles to a Strait which is barely one.

Immediately north of the headland, the St. Charles flows into the St. Lawrence, and 7 miles to the east down stream, the shore is cut

by the rocky gorge of the Montmorenci.

Between these streams Montcalm disposed his army, fixing his headquarters at Beauport, east of which place the abrupt and rocky heights were raised too high above the water to be reached by canon from the ships, while west of it stretched broad flats of mud.

Entrenchments, batteries, and redoubts were thrown up commanding all these approaches to the river front. On the walls of the city, 100 canon were mounted, and a bridge head constructed, to

guard the boat bridge connecting city and camp.

For the defence of the river, a floating battery of 12 heavy guns was established, besides several gunboats and fire ships, but the vessels of the convoy and their escorting frigates were sent up the river beyond Quebec, while the sailors were taken to the batteries ashore, thus surrendering to the British without a blow the power of offensive action by water, a mistake that incurred heavy penalties.

The French had trusted to the difficult navigation of the St. Lawrence to deter the English from approaching Quebec, but they reckoned without the masterly skill of the British Sea Captains of those days, who, in some cases, scorned to use the services of the Canadian pilots (captured en route by a ruse) and ship after ship of the Line crept up stream, where the French had feared even to take a coasting steamer. They anchored off the Isle of Orleans on 25th June without a single mishap, and the troops landed without resistance just in time to avoid a sudden squall which drove many of the ships ashore.

It is this superb feat of pilotage, which made further operations possible, and it is interesting to know that the old skill in pilotage is still kept alive in the Navy in the present time by a regulation, which allows a man-of-war a pilot once only when entering any new port, whereas, in foreign navies, no ship ever enters a port without

Vandreuil took this opportunity of letting loose his fire ships against the British fleets, but these were on each occasion harmlessly towed ashore by the sailors.

Wolfe, meanwhile, reconnoitred the French lines and city, but found no opening for a successful attack; he therefore decided to occupy the heights of Point Lévis with Monkton's Brigade, and commenced a cannonade in July on Quebec, chiefly from the southern shore

As this only alarmed the inhabitants and destroyed the buildings, and did not in any way affect the French Army itself, Wlofe on the 8th July sent Townshend's and Murray's Brigades to entrench themselves on the eastern side of the Montmorenci, leaving a detachment to hold the camp on the Isle of Orleans.

The British force was now divided up into three portions all separated by water, but the French kept strictly on the defensive, and as their vessels were hors-de-combat, they had not the power of taking advantage of such a situation.

Operations were now at a deadlock, except for the cannonading. Wolfe saw no chance of a successful attack and the French would

not move

At this juncture, the Navy again came to the rescue, and on the night of the 18th July, H. M. S. "Sutherland," of 50 guns, with several smaller vessels, performed a feat that was not considered possible, and sailing past the batteries of Quebec, covered by the fire from the guns at Point Lévis, anchored above the town, there being no French ships to interfere with them.

'This move obliged Montcalm to detail 600 men to hold the few accessible points between the city and Cap Rouge, 8 miles above it.

Wolfe now made even a fourth detachment and sent it to ravage the country to the westward of Quebec, but Montcalm still declined to attack.

The season was wearing on, and Wolfe had got no nearer his main object, while Montealm seemed likely to play the part of Fabius with success.

Wolfe therefore determined to attack Montcalm's camp in front. For this he could only muster, after providing for the defence of the camp, about 5,000 men, against a force more than double his strength.

A small strip of strand, about a mile to the westward of the falls of the Moutmorenci and accessible also from a ford from the British camp, offered some chance of a landing. It was defended by redoubts, commanded from the heights above, which fact however Wolfe did not know; he hoped to capture one of them and thereby

tempt the French into a general action.

Accordingly on the morning of 31st July H. M. S. "Centurion" and two armed transports opened fire on the redoubts while the batteries from the Montmorenci entrenchments fired on the flanks of the French camps. At eleven o'clock boats full of troops moved out from Point Lévis and feinted opposite Beaufort to distract the enemy's attention from the projected landing place; this continued till half past five, when the boats made a dash for the shore under cover of a redoubled fire from the floating batteries.

Montcalm, however, by now had divined the dangerous zone, and had collected the whole of his 12,000 men between Beaufort and the Montmorenci.

While approaching shore, some of the boats struck on the flats, thus creating delay and confusion, but 13 companies of Grenadiers and 2 of the 60th got ashore, followed after an interval by the remainder.

Now followed one of those peculiar events which mar the best

laid plans in war.

The trusted Grenadiers got out of hand, did not wait for the supports to form up, but dashed forward in a mob to the redoubt and cleared it of the French, only to be subjected to a tremendous fire from the entrenchments above. Upon this, they made a mad rush to struggle up the steep slippery ascent, only to be rolled back in scores by the hail of musketry that met them.

At this point, the elements intervened, and down came a deluge of rain on the combatants wetting the ammunition so that further fire became impossible, while the slippery ascent was rendered more difficult for the attackers.

Wolfe therefore ordered a retreat, and it was eventually found that nearly half the Grenadiers and 60th were either killed, wounded or missing to a total of 500 officers and men.

As a result of this attempt, the French were highly elated, hoping the campaign was virtually at an end, and it is said that Wolfe entertained the same idea, and even thought of leaving a portion of his force in a fortified camp before Quebec, in preparation for a further attempt in the following spring.

However, whatever he may have thought, he did not retire, but made yet another attempt to provoke desertion among the Militia, and exhaust the Colony in order to entice Montcalm from his lines, by laying waste all the settlements around Quebec.

This only resulted in reprisals from Montcalm's Indians and did

not further the main object in hand.

At this crisis the action of the Navy again made further advances possible.

With very fair wind, more and more ships braved the fire of the batteries in Quebec, until on the 5th August a flotilla of flat boats even followed their example, while 1,200 men under Monkton marched overland along the south bank to do service in them.

This caused Montcalm to detach another 1,500 men from the camp at Beaufort to check any landing above the city, which as some 15 to 20 miles of front had to be watched involved a most arduous and anxious task.

But so well was it performed that only after two repulses did Monkton succeed in burning a large magazine of French store. The alarm raised however was so great that Montcalm himself hurried to the point, only to find that the British had retired.

The French now began to grow seriously uneasy. The army was on short rations for owing to the lack of land transport, their

line of communication still lay by water from Montreal, and British ships were now in a position to intercept them; so the error of sending the frigates up the river was again keenly felt, and nothing prevented the English squadron gradually collecting in small detachments above the river. The French could only hope for the arrival of winter to drive the British shipping out of the river before Quebec should be starved out.

On the 20th August, Wolfe fell ill and was compelled to delegate the conduct of operations to a council of his Brigadiers. Several plans were put forward, but were rejected in favour of an attempt to gain a footing above the city to cut off Montcalm entirely from his supplies and compel him to fight or surrender. Wolfe accepted it forthwith, as the army had already lost 800 men killed and wounded, and had been still more seriously affected by disease.

On 3rd September the troops from the camp on the Montmorenci were withdrawn; and a further flotilla of flat boats being passed above the city enabled Wolfe with seven battalions to embark in Admiral Holmes' squadron which had now reached 22 vessels great and small.

This withdrawal corroborated by the reports from deserters, led the French to think that the expedition was about to retire, which fact was almost the case.

Montcalm now reinforced Bourgainville to 3,000 men; the latter's headquarters were at Cap Rouge with posts at Sillery and Samos down the river and at Anse-du-Foulon 1½ miles above Quebec.

Wolfe making a personal reconnaisance and after examining mile upon mile of the heights, discovered with his telescope a narrow path running up the face of the precipice and presumably lightly-guarded, as only a few tents were to be seen at the top. He determined to make use of this slender chance if in any way possible.

In order to mislead and mystify his opponent, Wolfe now ordered Holmes' squadron and the troops in the boats to move up and down between Cap Rouge and Quebec. This was continuously done between the 7th and 12th September, thus causing Bourgainville much anxiety, and he wore out his troops marching them to and fro.

On the 12th September deserters from Bourgainville's camp brought the news that a convoy of provisions would be passed down the river to Quebec at the next ebb-tide, which fact it was determined to make full use of.

Wolfe therefore ordered that all men who could be spared from the standing camp should be marched at nightfall and wait at a point on the Southern bank till he could embark them to aid him above Quebec.

As night fell Admiral Saunders with his main fleet moved out of the basin of Orleans and ranged his ships along the length of the camp at Beaufort, the boats were lowered and manned by Marines, sailors, and soldiers, and a heavy fire from the ships was opened on the beach, as if to prepare for a landing. Montcalm was completely

deceived by this and massed the whole of his troops at Beaufort to repel the expected landing.

Meanwhile Holmes' squadron, with boats moored alongside the transports, lay quietly anchored off Cap Rouge, and showed no sign of life till dusk, when 1,700 men took their places in the boats and

commenced to drift up the stream with the tide.

The total force that Wolfe had for this attempt on board Holme's squadron was 3,600, which was divided in two divisions for the attack. Colonel Burton had also collected another 1,200 from the standing camps, and they were ready to be conveyed to the point of attack in support, thus bringing the force up to 4,800.

Bourgainville saw the above movement and expected an attack at his headquarters upstream, while Monsieur Vergor who commanded the detachment in tents at the top of the path before referred to thought he might go safely to bed, after having allowed the majority of his men to go harvesting, making sure that no one would attempt to scale the precipitous heights below; further, the battalion of Guienne, which had been ordered to take post that day on the plains of Abraham, for some unexplained reason, did not do so.

At 2 a.m. the tide ebbed and the flotilla dropped silently down stream followed later by the sloops and frigates with the second divisions of 1,900 men. Bourgainville, thinking the movement to be only a repetition of the daily drift up and down by the fleet, resolved not to further harass his men by a fruitless march after

them, and halted above Cap Rouge.

The boats on their way were twice challenged by French sentries, who were put off by the reply in French from an officer, that they were the provision convoy which had been expected.

The despatch of these boats, however, had been postponed, but

the sentries had not been warned.

The boats were carried somewhat below the intended landing place and the path, but the 24 men who had volunteered for the enterprise, slung their muskets and dragged themselves up the cliff by the stunted bushes that grew there.

Dawn broke as they reached the top and they dashed at Vergor's tents, surprising the French, who bolted. Their cheer gave Wolfe the signal, and the rest of the troops swarmed up the path and cliff, while a detachment was sent to silence the batteries at Sillery and Samos.

The disembarkation was pushed on and by the time the sun

was up, 4,500 men had accomplished the ascent.

Wolfe went forward to review the situation and it was not an enviable one, for Montcalm and the garrison of Quebec lay in front and Bourgainville behind; but he had dared and the God of Battles declared for him.

He decided to draw up his force on what are known as the plains of Abraham, a tract about a mile wide and covered with grass, broken by patches of corn and clumps of bushes, and bounded on each side by the St. Charles and the St. Lawrence,

His only chance of success lay in the hope that the French would allow him to defeat them in detail, by attacking him in front before Bourgainville could co-operate effectively in his rear. He drew up his men in one line of three ranks, facing Quebec, its right on the heights above the St. Lawrence, and its left thrown back near some scattered houses.

Three battalions were in rear in reserve, two on the right, of which one kept communication with the landing place (guarded by two companies only), and one on the left. Howe's Light Infantry remained detached in a wood far to the rear to hold Bourgainville in check.

Monkton commanded the right, Murray the left, while Townshend supervised the scattered battalions in reserve. Wolfe remained with Monkton, as it is stated that he surmised that Montcalm might endeavour to cut off his retreat from the boats.

The road from Sillery to Quebec ran straight through the centre of the position; here Wolfe's only light field gun was posted, which represented all his artillery, until the middle of the fight when another gun was successfully dragged up the heights.

It is now time to turn to Montealm. He had passed a troubled night, the false attack on Beaufort had kept him in continual anxiety and he was still more disquieted at daybreak to hear the sound of cannon at Sillery and Samos.

Having received no information from the Governor in Quebec to whom he had sent an officer, he rode up at 6 o'clock to reconnoitre himself, and from the right of his camp caught sight over the St. Charles of an ominous band of scarlet, stretching across the heights two miles away.

He ordered up his troops from the right and centre camps at Beaufort who had only just been relieved from manning the entrenchments, and they streamed in hot haste across the bridge through the narrow streets of Quebec.

Here Vandreuil who was virtually Commander-in-Chief could not be found, and there was neither unity of direction nor of obedience. Montcalm applied to Ramsay, the Commander of the garrison of Quebec, for 25 field guns; but he not having the military insight to understand that the defeat of the British Army meant the defence of Quebec, sent only three, declaring he needed the remainder for the protection of the walls.

Now followed an anxious delay waiting for the troops from the left of the Beaufort camp, which never came; it is said that Vandreuil detained them to protect the Beaufort shore.

Montcalm meanwhile held a council of war and decided to attack at once with the 5,000 men he had collected, thus surrendering the advantage of numerical superiority, which he could have obtained by delay.

By 9 a.m. the French line of battle was formed 600 yards from the British position. It consisted of three bodies in column with skirmishers on the right and left composed of Indians and Canadians who swarmed forward in advance of the line of battle, taking cover both on the flanks and in front among the scattered bushes. Wolfe threw out skirmishers to meet them, and the fusilade began.

The pressure on the British left began to be so severely felt that Townshend brought up, before the action was well begun, the rear guard and half the reserve to protect the left flank which was en Uair.

The fire on the British right was less deadly, as here the sharpshooters could not get round the flank. However Montcalm's attacks appeared to be based on no settled plan, as the attack on the left could have been pushed to some advantage.

In the meantime Wolfe's single gun answered Montcalm's three

with great effect.

A little before 10 o'clock the French line advanced to the true attack, the regulars in the centre, and the British, who had been lying down, sprang to their feet and stood steady. At 2,000 yards the French opened fire but with little effect, and a sudden delay in their advance was caused by the Canadian skirmishers throwing themselves on the ground, as was their custom, to reload.

Wolfe ordered his men to reserve their fire and they still stood steady until the French were only 35 yards off, when the most perfect volley was poured into their ranks, and muskets at once

reloaded.

Nearly every bullet must have taken effect on the French line which appeared shivered to fragments.

Montcalm conspicuous on a black charger galloped up and down to restore order; but after one more volley the Red line led by Wolfe dashed forward to the charge.

The French after some wild firing broke and fled demoralised towards the city, and it only remained to clear the bushes and corn patches of the sharpshooters who were worrying the Highlanders.

Montealm borne along with the fugitives was shot through the body as he neared the walls; and on the side of the victorious, Wolfe had fallen in the charge, while Monkton was disabled, leaving Townshend in command.

No sooner had it devolved on him than he found the rear of the army threatened by Bourgainville, who however having seen the strength of the British forces, was induced to retire with two battalions and his field guns.

After a short pursuit he proceeded to entrench himself on the battlefield and reckon his losses, which were cheap at the magnitude of the success gained, though they totalled 664 of all ranks compared with 1,500 of the French in casualties and prisoners.

By midnight good progress had been made with the entrenchments, and cannon brought up to defend them. The men had been on duty continuously for 36 hours and it is curious to note that no mention is made of their exhaustion, which must have been great.

Utter confusion reigned in the French camp. Vandrenil appeared 4 hours after he had heard the first alarm and called a

council of war, sending a message to the dying Montcalm for advice. The latter replied that three courses were open:—To retire up the river, fight again, or give up the Colony; but the demoralisation was too deep to allow of any bold action being taken and at 9 P.M., on September 13th, Vandreuil gave the order to retreat to Jacques Cartiers, 30 miles up the St. Lawrence, the garrison at Quebec being instructed to surrender when provisions failed.

Knowing that the French had still superior numbers, and though demoralised might rally on joining the force under Lévis, Townshend pushed forward his trenches against Quebec with untir-

ing energy.

On 17th September the British ships of war moved up against the lower town and a scarlet column approached the walls from the meadows of the St. Charles.

The French Regulars were willing to resist, but the Canadian Militia refused to turn out, and the white flag was hoisted over the

city.

The officer with the French flag of truce endeavoured to gain time but Townshend was peremptory.

Unless the town was surrendered by 11 o'clock he would take it by storm. On this Ramsay signed the capitulation.

None too soon, for the ink was scarcely dry on the agreement, before Canadian Horsemen arrived with provisions, and the message that Lévis would shortly arrive: but it was too late.

On the afternoon of the 18th September the British entered the city and were employed during the next few weeks strengthening the defences and making provision for the winter, for it was decided to hold the fortress, at all cost, with 7,500 men under Murray until next year.

At the end of October the British squadron dropped down the river with the embalmed remains of Wolfe, to be laid in the parish

church at Greenwich.

Thus ended the first stage of the conquest of Canada.

Books consulted —

History of the British Army (Fortescue). Montealm and Wolfe (Parkman).

Conquest of Canada (author unknown).

### COMMENTS AND LESSONS.

Comments after a campaign, based on the imperfect knowledge of the actual circumstances as they were at the time, must perforce smack largely of wisdom after the event, but they are necessary if benefit is to be derived from the experience of others.

Though Quebec had been captured, there is no gainsaying the fact that the concert of operations intended by Pitt had broken down, and the reason why, can best be given in the pithy words of one of the writers on the subject (name unknown). In fine sareasm they aptly describe a plan of a campaign that is drawn up by the politician; which glitters, but is not gold.

"When Pitt cast his eye over the scantily traced map of the Western World, he disdained to note the almost unsurmountable difficulties which its broad blanks unobtrusively represented. As his bold hand struck out the several lines of operations, he forgot the hideous wilderness, the stormy ocean, and the dangerous lake, over the tracing of which his pencil passed, and his daring heart doubted not for success. It is a trite observation that a combined movement is always precarious even under the most favourable circumstances, but in a case like this, with all the superadded chances of the sea, the river, and desert, a wisdom greater than that of the wisest, a power stronger than that of the most powerful, could alone have given us the victory."

In reality. Pitt did not deserve such a criticism, but a strong

note of truth runs through it nevertheless.

2. The St. Lawrence furnished the French, on interior lines, with a means of intercommunication that gave them the opportunity of dealing with the British concentric advance in detail, while the portions of it were entangled in broken and difficult country.

3. On the other hand by avoiding making detachments so as to obtain superiority at the decisive point—the total strength of the British (25,000 men) might have been launched viá the Hudson River, Lakes Champlain and St. George, against the most vital part of Canada, while the fleet blocked the St. Lawrence by the Isle of Orleans.

There is much to recommend this plan, as the French would have presumably resisted it with all their force while the numerical odds would have been decidedly in the British favour, though they would not have used their sea power to its fullest extent.

However the defeat at Ticonderoga in the preceding campaign may have decided Pitt to plan otherwise, especially as the line of communication would have been long and the attitude of the powerful Indian tribes along it uncertain.

4. Again the whole effort might have been made against Quebec, by the way of the St. Lawrence, as it offered a comparatively sure line of communication for provision boats, if not for large craft, and required no men to guard it. The events of the campaign of 1758, however, precluded such a plan, as the detachments that had been left behind in garrison in the west, had to be reinforced, in addition to which there was the necessity of protecting the settlers from French and Indian raids. So Pitt was compelled to take some action in that quarter.

5. Facts point strongly to the conclusion that Pitt wishing to make some marked impression against France in this campaign and having failed to get good results from the Lake Champlain line of advance in 1758, relied therefore in 1759, on the stroke at Quebec which combined the action of the Navy and Army. Though being tied to the western line, he ordered Amherst in none too definite terms to co-operate simultaneously with all the troops, unallotted to Wolfe. As it was, the latitude he allowed to Amherst was

unfortunate, as it led to further detachments and digressions from the main object in hand.

6. It is said that Pitt consulted Amherst in the plan of campaign for 1759, whoever he may have sought advice from for that of 1758, and Amherst so thoroughly carried out the necessary preparations that one of Wolfe's first acts on arrival at Halifax was to acknowledge to Pitt his gratitude for the execution of the work done.

The dissensions between Vandreuil and Montcalm led, in marked contrast on the other hand, to an imperfect execution of the workable plan of campaign which had been sent from France, i.e., to concentrate and make no detachments, the reverse of which was actually

done.

Once a plan of campaign has been settled on, the execution should be left to the General to whom it may be entrusted. Divided control is fatal.

7. Here attention may be called to Pitt's happy selection of Commanders for the expedition to Quebec; all young and energetic,

and aptly suited to the requirements of the situation.

8. Reviewing Amherst's operations and their failure, the criticism seems to be fair that he resembled Martha, who being busy with little things, forgot the Kingdom of Heaven, for although he is recorded as having written to all his subordinates to push on to Montreal, yet he himself worried over the building of forts and forebore to push on to the help of Wolfe, which was the main object of his advance, when once he had relieved the garrisons en route.

Then again, if this want of foresight in not building the armed boats when at the south end of Lake Champlain is passed over, the fact that he delayed their construction and consequently that of his advance by using the wood from the sawmills for his fort and not exclusively for the boats is further evidence of his lack

of appreciation of the main object in hand.

He is described as a methodical man, but method in a commander needs some madness mingled with it, if great deeds are to be done.

9. As Amherst decided to take advantage of the latitude allowed to him by Pitt, the despatch of a force against Niagara seems to have been well chosen though of course it was a minor object in the campaign. It relieved the pressure on Stanwix on the Ohio and was accomplished in sufficient time for the advance to the St. Lawrence to co-operate with Amherst had he been able to push forward earlier.

Reverting to the main object of the campaign, it seems, however, that it would have been better for Prideaux's 5,000 men to have turned north at once against La Galette after the reduction of Oswego; and he would noldoubt have made greater headway against it than Gage who, in contrast, feared to take the odds; an example of how much depends on a leader's character in war; Prideaux would never have given such a reason.

If Prideaux had pushed up the St. Lawrence it is possible that he could have considerably aided Amherst's main advance as he would

have threatened the French at Isle Aux Noix in flank.

10. The effect that Amherst might have produced on Montcalm's plans, if he had only kept the main object before him, is shown by the anxiety that the advance as far as it went caused that General; Lévis having been despatched to Isle Aux Noix when only Crown Point had been reached. What further detachments might not have been made if the advance had been persisted in!

11. The following minor points are also deserving of notice:

The four armed boats on Lake Champlain offered a remarkable example of the command of the sea, bringing to a standstill, as they

did, a large force.

12. Johnson's bold action in moving out to attack the relieving force approaching Niagara met with the success it deserved, though it is difficult to understand why it was necessary to leave so large a portion of his force in charge of the entrenchments and boats; for the main object at that moment was the defeat of the hostile relieving force, the destruction of which would have involved ipso facto the fall of Niagara and the safety of the boats.

13. Turning to the operations before Quebec, the salient feature of the campaign is the splendid work done by the Navy. Everything that was achieved was made possible by their action, commencing with the masterly skill with which the transports were brought up unharmed before Quebec, and the intrepidity of the

sailors, who saved them and the frigates from the fire ships.

It was the audacity of Holmes' squadron which first threatened the supplies of the city and forced Montcalm to detach Bourgainville and his 3,000 men. Again it was this squadron and the main fleet under Admiral Saunders that tired out the enemy by feinting at all points.

The fleet gave Wolfe his mobility, allowed him to make detachments with impunity, and attack the enemy where he

wished.

14. Conversely, the ill-advised action of the French, in placing their ships hors de combat without striking a blow, deprived them of their mobility by water and the power to take advantage of the dispersion of Wolfe's forces. It opened also the way for Holmes' attempt, for if the French had still had some ships "in being," it is probable that this attempt would not have succeeded.

15. Command of the sea gives the fortunate possessor the power of surprising his enemy, attacking him when and where he will, and

the privilege of changing his base of operations as required.

The first two advantages were strikingly exemplified in this campaign and the last to a minor degree, with reference to Wolfe's frequent change of camps from Orleans to the Montmorenci, etc.

16. It is not clear why Wolfe did not transfer his troops to the westward of Quebec earlier, H. M. S. "Sutherland" having shown him the way on the 18th July. It was not till the proposal was made him by his Brigadiers in September that Wolfe decided on this attempt. He was, however, wretchedly ill at the time, which may have been the reason.



17. In the attack of the 31st July on the Beaufort camp the precipitate action of the Grenadiers was an example of what happens in a fight, when troops act for themselves without reference to the general plan of operations.

18. The previous personal reconnaissance by the Commander was well illustrated by Wolfe's discovery of the path up to Monsieur Vergor's tents, and again by his action on the plains of Abraham

when the site for the battle had to be chosen.

19. In the Beaufort camp affair it is interesting to note the extent to which the combatants of those days were at the mercy of the elements, a sudden burst of rain being able to stop all firing on either side by damping the ammunition.

20. The necessity for passing information is evidenced by the ignorance of the sentries above Quebec of the fact that the despatch

of the convoy had been postponed.

21. The unexpected always occurs in war, and fortune favours the brave.

These are trite sayings but they are true.

For example the French considered the passage of the St. Lawrence impossible without pilots and previous knowledge, and the strait south of Quebec impassable, while Monsieur Vergor and even Montcalm imagined the heights above Anse-Du-Foulor safe against attack.

The combination of chances which brought success to this bold

attempt is remarkable.

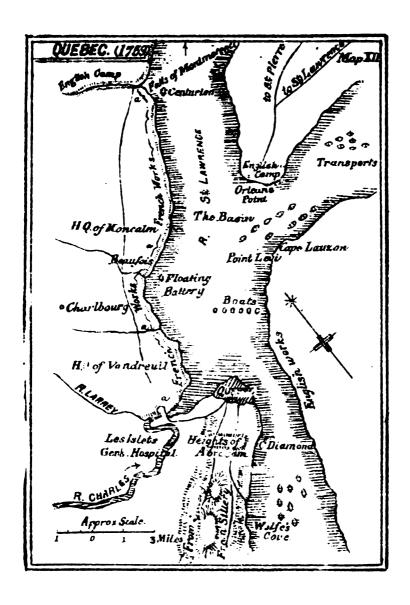
22. The use of a knowledge of the enemy's language is well illustrated by the reply of the officer in the boats to the sentries near Sillery and Samos, if they had not been lulled to security and had fired, Quebec might not have fallen that year. A similar case might occur again in any future campaign.

23. The value of reserving fire until full effect can be obtained is as necessary to-day as it was when Wolfe practically won his

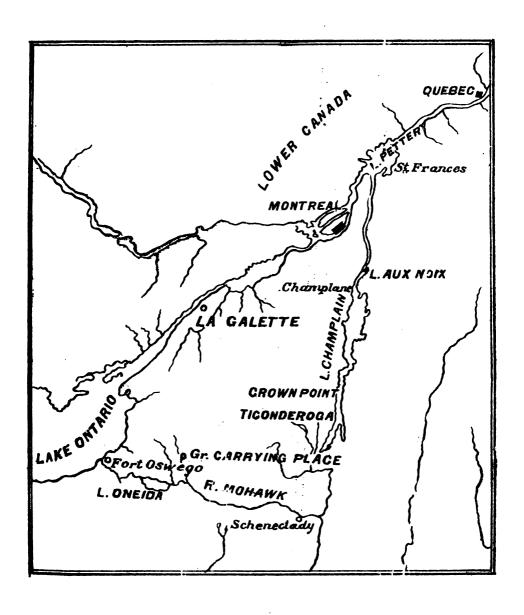
battle with a single deadly volley.

- 24. It is difficult to realise why Montcalm attacked Wolfe when he did. The delay of a few hours could have brought him everything, artillery sufficient alone to have overwhelmed his opponent, Bourganville in the enemy's rear with 3,000 men, and his own whole force in front.
- 25. The shortsighted action of Ramsay in keeping back the field guns for the secondary object of the defence of the walls of Quebec was fatal.
- 26. The hardships which soldiery had to endure in those days contrast with the care taken of the British soldiery of today, as evidenced by the fact that the garrison of Louisburg suffered severely from the rigours of a Canadian winter, as no provision had even been made to provide them with coverlets.











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#### INTERIOR OR EXTERIOR LINES?

By Captain C. F. Aspinall, p.s.c., The Royal Munster Fusiliers.

"Strategy," we are told, "is not an exact science"; and in no way could the truth of this axiom be shown better than by the diversity of opinion that exists about the rival merits of interior and exterior lines.

That opinions on this point should be so divided cannot be a matter for surprise when we remember how diametrically opposed in this respect were the views of Napoleon and Count von Moltke. So entirely at variance, indeed, do the principles of those great Masters of War at first sight appear to be, that it cannot but be of interest to begin this article by placing their written statements side by side.

"When the conquest of a country is undertaken," says Napoleon, "by two or more armies which have each their separate line of operation until they arrive at a point fixed upon for their concentration, it should be laid down as a principle that the junction should never take place near the enemy." And again he says, "An army ought to have only one line of operation. This should be preserved with

care, and never abandoned but in the last extremity."

Napoleon's views on the subject are, therefore, abundantly clear, but let us now turn to what Moltke has to say, and in his 'Instructions for Superior Commanders' we will find the following: 'Incomparably more favourable will things shape themselves if, on the day of battle, all the forces can be concentrated from different points towards the field of battle itself; in other words, if the operations have been conducted in such a way that a final short march from different points leads all available forces simultaneously upon the front and flanks of the adversary. In that case strategy has done the best it can ever hope to attain, and great results must be the consequence."

"Who," we may ask, "can decide, when doctors disagree?" And yet, when we examine the campaigns of these great commanders, we find that, though their method of waging war, in its initial stages, thus materially differed, both of them invariably had as their ultimate object the same fundamental and unchanging principle, namely, the massing of superior strength at the decisive point at the right moment; and the cause of their divergent views seems, to a great extent, to lie in the difference between the conditions which existed at the beginning, and in the middle of the nineteenth century.

In the days of NAPGLEON, despite the fact that the French army operated on interior lines in the two campaigns immediately preceding the Emperor's abdications, there can be little doubt that this

form of strategy was, in nine cases out of ten, superior. NAPOLEON himself has told us so, and we have the record of his many successes to add weight to his words. But this superiority, it must be remembered, was mainly due to the difficulties which a General of that period, on exterior lines, had in communicating with his various columns, and to the fact that, without free communication, it was almost impossible for him, owing to the want of an established system of training for staff officers, to secure that co-operation from his subordinate commanders by which alone success can be attained.

Times, however, change. The middle of the nineteenth century witnessed the advent of inventions which revolutionized the world, and altered many preconceived ideas on the methods of waging war. In the front rank of those changes came the altered circumstances of a force on exterior lines, and MOLTKE was among the first to realize that the telegraph and railroad had swept away the main objections to this form of advance. At the same time the growing size of armies was making it increasingly hard to feed, or to deploy, in a confined space, the hosts of which they were now composed, both of which facts detracted from the merits of a single line of advance.

When, therefore, coupled with the above considerations, we remember that in 1869, when MOLTKE wrote his "Instructions for Superior Commanders", he had the success of his 1866 campaign to support him, we can see that he had good grounds for asserting that a concentration on the battlefield offers the best chances of success.

That all the advantages of interior lines had passed away, though, cannot be admitted; for it is at least open to question whether much of the Prussian success in 1866 was not due to the unreadiness of the Austrians, and whether BENEDEK did not throw away an opportunity of defeating his enemy in detail when he marched against Frederick Charles, who was furthest away from him, instead of hurling his whole strength against the army of the Crown Prince.

In the forty years which have clapsed since that war, modern inventions have continued to make things easier for a force on exterior lines, but it would still appear that, though the dangers of that form of advance have been reduced, they have by no means disappeared, and it will therefore be of interest to examine closely the merits and de-merits of both exterior and interior lines as they exist at the present day. For the sake of simplicity it is proposed to set down in order, and to discuss, the advantages and disadvantages of each method in turn.

Dealing first then with exterior lines, the advantages seem to be:—

(1) At the beginning of a war, their advantage will be especially marked if the enemy has a salient frontier. By using exterior lines in this case all railways leading to both sides of the salient can be made use of for the initial deployment—a point of considerable importance

now that a little time gained at the outset may mean the winning of the campaign. Also, if an advance is made from both sides of the salient, the enemy may be tempted to split up his forces to watch all avenues approach, and so be strong nowhere.

(2) It is easier to feed large armies when they are not concen-

trated.

(3) During the advance, it is easier to surprise the enemy, as he cannot tell where the point of concentration will be, and he will be filled with doubt and uncertainty in

consequence.

(4) If the enemy is surprised, an attack from different directions will confuse the hostile commander, while the fact of feeling caught in a net will upset the morale of his troops.

(5) Exterior lines facilitate development of an army on the battlefield, which experience teaches to be the best

form of tactics.

(6) If the enemy tries to evade the blow, it is comparatively easy to alter the point of concentration.

The disadvantages of exterior lines, on the other hand, appear

to be:-

(1) If the enemy is well organized and well led, he still has a chance of defeating the converging columns in detail. With regard to this point it is true that the strength of modern firearms has made it easier for a small force to hold out till reinforced, and that the telegraph has facilitated the calling up of reinforcements, as it also has made it possible for one of the other columns to relieve the pressure by immediately attacking the enemy elsewhere, but it must be remembered that the enemy, also by means of the telegraph, will probably hear of every move against him as soon as it is made, and that there is therefore less chance than ever of his being surprised, and more chance than ever of his being able to throw his whole weight against an isolated column. Though isolated General can now wire for reinforcements, their rate of marching to his relief will be little quicker to-day than it was a hundred years ago.

2. Much confidence has to be placed on subordinate commanders. Similarity of education has made it more likely that subordinate leaders will be men who can be thoroughly trusted to do what the General-in-Chief would desire, but the man with the biggest reputation is not always the man who will do best

when the critical moment arrives.

3. Superior numbers are essential for complete envelopment or subsequent successful pursuit.



Turning to interior lines, the advantages are:-

(a) The General-in-Chief has his whole force under his immediate command, and, with speedy information, should be able to crush the converging columns in detail.

(b) If he is surprised, all his troops are at hand.

The disadvantages of interior lines are :---

(a) The difficulties of feeding a large concentrated army acting on the offensive. The number of parallel and neighbouring railways in Europe might obviate the difficulty in a continental campaign, but the question of water would often be a difficult one.

(b) It is hard to deploy a large force quickly from a confined

space, unless its organization is perfect.

(c) All successful actions now-a-days will, as a rule, consist of a turning or enveloping movement, combined with a frontal attack. If, therefore, a force is not on exterior lines before an action, this will necessitate a flank march in the face of the enemy, which will destroy all chance of surprise, will delay the attack, and will be, above all, a risky move.

(d) If the converging columns cannot be kept separated, the

force on interior lines will probably be crushed.

(e) It is hard for a concentrated army to conceal its intentions, as, owing to the difficulties of managure, it is generally compelled to march straight to its front.

Summing up these various theoretical advantages and disadvantages, it would appear that the army on exterior lines is now-a-days in the best position, for whereas half the advantages which can be claimed for interior lines are in reality but compensations for weakness, exterior lines seem to give added power to their possessor, in that they facilitate supply and the movements of troops, increase the chances of being able to use that most powerful of weapons—surprise, and produce the best tactical employment of fire-action.

Unsupported theories, however, are always dangerous, and it will be well to consider how the above were borne out by the most modern example of exterior *versus* interior lines—the Russo-Japane-

SE War.

In this war we saw the nation with the largest standing army in the world, engaged with a new and small isolated power. The former however were unready and without a plan of campaign; the latter were prepared in every way for the task for which they had been arming so long, namely, to re-capture PORT ARTHUR, to secure their footing in KOREA, and to drive the RUSSIANS out of MANCHURIA.

Unreadiness and a k of transports would, from the first, have made any invasion of JAPAN by RUSSIA an impossibility, and we need, therefore, only concern ourselves with the operations on the mainland. Had JAPAN not secured working command of the sea at the outset, she would have had only one hazardous line of land

operations open to her, namely a landing in the south of KOREA, and an advance up that country to the YALU. The RUSSIANS would have known exactly where to expect her, and would have had time to mass a considerable force to oppose her advance, in short the disadvantages of this course for JAPAN need no comment.

With the JAPANESE in command of the sea the whole situation changed, and Russia at once began to suffer from all the disadvantages of a salient frontier with a base 5,000 miles in rear of it. JAPAN could practically land her armies anywhere or everywhere from YINKOU to VLADIVOSTOCK, and RUSSIA, as a result, fell into the common error of trying to guard all likely approaches, and being strong nowhere, in consequence. Just as we have noted in theory, the advantages of using all railways leading to both sides of a salient for the initial deployment, so do we here see the various landing places round the coast securing the same advantages for JAPAN. Not only could she mystify the Russians as to her lines of advance, but more important still, she could gain time. Her object was to envelop and crush the Russian field army as soon as possible; but she knew that no railway would be open to her, and that roads were few and bad: she therefore saw that a single line of advance would be dangerous and slow, and would give the enemy the chance either of massing against her point of landing, or of retiring before her towards their reinforcement. Further, as JAPAN'S object was also to capture Port Arthur and secure Korea, an advance from only one of these directions would, in the first instance at least, have performed only half of the allotted task.

The initial advantages secured by the JAPANESE in using

exterior lines are therefore plain.

After the initial deployment for the advance on LIAOYANG. however, the second advantage to be gained by exterior lines, namely surprise, was conspicuous by its absence, and we see rather the risks of being destroyed in detail which this form of advance still The critical position in which JAPAN found herself at the end of July 1904-her three armies strung out within striking distance of a superior force - was undoubtedly due to her faulty strategy in pursuing two objectives, the capture of Port Arthur and the destruction of the RUSSIAN field army at the same time, but the risk was still there, and it can only be accounted to her good fortune that the Russians were too ill-organized or too ill-led to take advantage of their chance. Now, if ever, while the JAPANESE armies were waiting, inactive, for the fall of PORT ARTHUR to swell their strength, was the time for the General on interior lines to defeat his enemy in detail, nor can it be doubted that had he contained KUROKI, and Nodzu's right, with a portion of his force and attacked the JAPANESE with the remainder, he would have succeeded.

Nor was this the only time when the weakness of exterior lines without superior numbers was evident; for who can doubt that, had the RUSSIANS made a better deployment at LIAOYANG, and kept a larger central reserve, they could have dealt with the JAPANESE

armies in that battle one by one. The RUSSIANS, however, were badly organized and badly led; the difficulties of quick deployment when concentrated were well shown; and both these golden

opportunities were allowed to slip away.

Turning to the question of supplies, the two lines which the JAPANESE were able to use when concentrated after Liaoyang (the Yalu line and the railway and road from the south-west) obviated many of the difficulties which they would have experienced with only one line. The Russians, it is true, managed to feed themselves by their single line of railway, but this was greatly due to the fact that most of their supplies came from Mongolia, and to the strictly defensive attitude which they displayed throughout the war. The greater ease with which an army can be enveloped by exterior than by interior lines, and the greater manœeuvring power of the former, were clearly shown throughout the war; but the failure of the Japanese to reap the fruits of victory also showed the necessity of superior numbers for this form of attack.

To sum up, the war may be said to have shown us that exterior lines, in addition to solving the difficulties of supply, offer greater chances of enveloping the enemy, but that there is no magic in this form of strategy, and that the risk of defeat in detail is still a very real one. For interior lines to succeed, now that armies are so large, the war has proved that the force must be exceptionally mobile, and its organization perfect, so that it can be deployed quickly and take

advantage of an opportunity the moment it occurs.

The war, as a whole, may be said to be disappointing, in that it did not establish beyond question the superiority of either form. The Japanese were eventually successful, but like the campaigns of 1815, 1866, and 1870, this may, by the adherents of interior lines, be attributed in great measure to the mistakes, unreadiness, or incompetence, of the opposing side. It is indeed unfortunate that in each instance in history of the success of exterior lines, the victory should thus be open to criticism, but it is to be noted that the successes of interior lines have on the other hand nearly always been attributable to a similar cause. To take only one instance, it is indisputable that the success of the Confederates in 1862 was chiefly due to the want of co-operation of the various NORTHERN columns, and to civilian interference with all the FEDERAL general's plans.

These facts, however, are in themselves not without their lesson, which is that victory will be on the side of him who, whether on exterior or interior lines, makes the fewest mistakes. Let us therefore remember that success in war depends, not on employing any particular form of strategy, but on a good initial plan of campaign, carried out with determination by a capable General, who, backed up by a well-trained army and an united people never lets a

mistake of the enemy remain unpunished.

### THE RUSSO-JAPANESE WAR.

BY COLONEL L. J. H. GREY, C.S.I.

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The War Office publication—entitled The Russo-Japanese War, British Officers' Reports—is in some respects disappointing. The reports themselves are, on the Japanese side, excellent, and they occupy two portly volumes. Those on the Russian side are meagre, and the smaller third volume which contains them is largely composed of other matter than the operations themselves. For instance, there are 29 pages of appendix showing the distribution of Russian troops on various dates, and 198 pages of notes on subjects ranging from balloons and bivouacs to postal service and water-supply, to veterinary and remount statistics; in all 227 out of the total 303 pages. Now the first two volumes also contain 197 pages of such extraneous matter, but they devote 1,161 pages to the Japanese operations as compared with only 76 pages in the third volume treating of the operations on the Russian side. This disparity extends also to the plates, of which there are 111 for the first two volumes to only 10 for the third volume. In speaking of extraneous matter we do not mean "superfluous." On the contrary most of it is interesting—some of it very important. What we lament is the lack of information on the Russian operations in the field. We have had already many books describing the Japanese successes: what we need is an account of the Russian failures. In this latter respect the War Office volumes are unsatisfying, with the exception of Colonel Waters' report on the battle of the Shaho; and for full particulars we must await the forthcoming translation of General Kuropatkin's book.

Why did the Russians fail? It is not enough to say, with Colonel Waters after he witnessed the defeat of Telissu, "The strong impression left on my mind was that the Japanese were the better men." The material was the same on both sides—Tartars both—and considering Russian deeds in the past the "better men" theory seems as inadequate as is that of superior Japanese artillery. Colonel Waters writes that "the Japanese at Wa-fang-kou (Telissu) owed their victory really to their artillery, which shows how essential it is to have that arm very highly trained." Sir Ian Hamilton, however, shows that the Russian arm was superior. He writes that he has noticed numerous very misleading remarks in European papers about the Russian artillery's inferiority. "This is indeed a strange error."

No, the difference of the two armies was in the leading; from the Czar and Vicerov down to Generals of Brigade there seems to have been a discord, an indifference to the common object, enough to paralyse any army. So different from the Japanese, with whom, writes Colonel Haldane, a "factor which has brought success is their strong sense of subordination.....It is this spirit of self-effacement for the public weal, mingled with fervent patriotism, which has won Japan her long series of victories." It was not until General Linevitch took supreme command on the 17th March 1905, of whom Colonel Waters writes that, in 1904, his "advent to command the First Army was hailed with delight as he was said never to have a sharp word for anybody"-not till then that there seems to have been any real loyalty from the Generals or whole-hearted support by the Government. Moreover, not till then, at Harbin, had the Russian Chief the requisite superiority for the offensive. Then, however, the revolutionaries crippled Russia at the very moment when Japan was exhausted; so lack of patriotism condemned the former to defeat up to the last—in America as in Manchuria.

Colonel Waters' reports, in Volume III, on the Russian Plan of Campaign, and the distribution of the Russian forces, abundantly show that Kuropatkin never had a fair chance. His plan of campaign, settled with the Czar in January 1904, was, before he reached the front in March, "thrown overboard and a series of disjointed operations undertaken." Kuropatkin's plan was "that the Russian army should first of all be concentrated in Northern Manchuria, and not assume the offensive until sufficient numbers had been assembled "at Harbin. Instead of this the forces "were scattered over an immense area, everywhere too weak. Thus they were beaten in detail" and "demoralised by the incessant retreats necessitated." Even Kuropatkin's reserve which "he meant to keep under his own hand until his concentration should be completed were half of them thoroughly defeated before two months had passed, owing to the plan of operations which was forced upon him." came the defeat of Zasulich on the Yalu; "the Viceroy, or St. Petersburg, or both, were responsible for having placed him there." Kuropatkin " was over-ruled" in this, but he had " ordered Zasulich not to accept battle"; nevertheless the Viceroy insisted. Next Stakelberg started to relieve Port Arthur, writes Major Home, "against the wishes of the Commander-in-Chief, in accordance with orders received from the Viceroy." Kuropatkin, says Colonel Waters, "was confident that the fortress could hold out until September at any rate, but he was over-ruled by the Vicerov." know, Port Arthur did hold out till the 5th January 1905, and could have held out a month longer and thus have allowed Kuropatkin to win at Mukden, by detaining Nogi's 60,000 troops. Holding that view about Port Arthur's safety Kuropatkin, after the Yalu, ordered the evacuation of Liaoyang on 8th May: but, writes Major Home, "this evacuation ceased on the 11th, it being said that the Czar had sent peremptory orders that the town was to be held at all costs."

Kuropatkin then hoped for a chance of dealing with Kuroki alone, failing which "he did not consider himself sufficiently powerful," says Colonel Waters, "to overcome a combined advance from the east and from the south on the part of both Kuroki and Oku. Yet he awaited it, while still holding this opinion" under pressure from above. And so it went on. After defeat and retreat from Liaoyang in August, it was pronounced in October "urgently necessary for the army to win one victory before the winter sets in," and it advanced to ruin on the Shaho. Read "urgently necessary for the dynasty" and we understand why Kuropatkin sacrificed his army then, and again in January on the Hun-ho, at Hei-kou-tai. At the Yalu, Telissu, Liaoyang, Shaho, Hun-ho, as at Sedan, it was political needs against military judgment—the welfare of a dynasty against that of a nation.

## II.

For the purpose of the student the War Office Reports on the Russo-Japanese war need to be strung together in a complete historical narrative. That of Major Home, in the third or Russian volume, comprises only the events up to the 15th August 1904; in the Japanese volumes the summaries by Sir Ian Hamilton and Colonel Haldane deal only with particular periods, up to September 1904, for the First Army, and with the events of May 1904 for the Second Army. There is a Diary of the War, merely five and-a-half pages of dates, and among all the 121 maps of the three volumes there is none which affords a general view of the movements on either side—such a skeleton map as should accompany a complete historical narrative for the instruction of students.

War was declared on the 5th February 1904; on the 8th the Japanese landing in Chemulpo commenced, and by the 16th their command of the sea was established and troops poured into Korea. By the 28th February the First Army under Kuroki (Guards, 2nd and 12th Divisions) was complete about Pinyang; a month later at Wiju it faced Zasulich's corps of observation on the Yalu. There the Viceroy caused that small force to fight and afford to the Japanese their first victory, on the 1st May. The 20,000 Russians thus put out of action did not re-appear till they faced the Guards again on the Tung-ho, on the 26th August. Almost without effort, therefore, the First Army was able to master the passes south of the Lan river, including the famous Motien-Ling (Ling = pass), on the Mandarin road to Liaoyang, by the 27th June. Meanwhile the Yalu victory was followed by the despatch of a Second Army, under Oku, against Port Arthur. Assembled at Chinampo (the port of Pinyang), the 1st, 3rd and 4th Divisions crossed the Bay and landed east of Talienwan by the 10th May, cut off the communications of Port Arthur with the north, and, on the 27th May, drove in the Russian garrison at the battle of Nanshan and invested Port Arthur. While this was doing, the 10th Division landed at Takushan, further up the Bay of Korea, on the 20th May, to occupy the passes west of

tho First Army and cover its left. By the 27th June this force had mastered the Fenshui-Ling, and, joined later by the 10th Reserve Brigade and by the 5th Division, it became Nodzu's Fourth Army. (Fenshui means watershed and is applied to sundry passes on this

range.)

First, however, the 5th Division had helped Oku at Telissu and Ta-shih-chiao. The 1st Division, joined by the 11th became Nogi's Third Army besieging Port Arthur, while Oku and the Second Army (now the 3rd, 4th and 5th Divisions) turned eastward against Stakelberg at Telissu on the 14th June. Here again the Viceroy caused 20,000 Russian troops to be put out of action. Stakelberg had 34,000 first and last; but eight battalions arrived on the 15th after the Russians were outflanked and practically defeated, while eight battalions were in reserve at the wrong place and only covered the retreat. Such was the commencement, at the Yalu and here, of the "defeat in detail" of the Russian forces "scattered over an immense area, everywhere too weak"—as before quoted from Colonel Waters.

Thus in the end of June, the First, Fourth, and Second Japanese Armies were getting into line; the two latter advancing respectively on Hsi-Mu-Cheng and Ta-shih-chiao, and the First Army to the Lan Valley, by the end of July. On the left Oku attacked Ta-shih-chiao without success on July 24th, but the Russians withdrew that night. Thus Oku was able to send the 5th Division to Nodzu on the 28th July, and on the 30th to lend another brigade for the attack of the Fourth Army on Hsi-Mutheng. Such co-operation was a feature of the Japanese system, and the 10th Division had before been assisted in taking the Fenshui-Ling, on June 27th, by a brigade of the Guards from the First Army. That brigade was recalled by Kuroki on July 22nd for his own battle of the 31st July. in which he mastered the left bank of the Lan-ho. It was replaced, as above said, by the 10th Reserve Brigade on June 3rd, and by the 5th Division on the 28th July. Thus by the first week in August the Japanese armies stood in line from Yu-shu-lin-tzu, on a branch of the Taitzu river, to Haicheng on the railway. The Russians had not meanwhile remained entirely on the defensive. After the defeats in detail at the Yalu and Telissa incurred under the Vicerov's orders Kuropatkin wished to concentrate. As before said he endeavoured to do so in North Manchuria, and commenced evacuating Liaoyang on the 8th May after the Yalu, but the Crar stepped that on the 11th, so the concentration was determined at Liaovang. To the south, then. Kuropatkin had en'v to retard the See and and Fourth Japanese Armies; his dang r lay to the cast from the First Army moving on his think. We a matters in May and June were taken out of his hands he could a little to prevent. Kur, so from eccupying the Moster runge, though the Japanese 12th Division, on Kuroki's right, was apposed at Servicht on June 7th and articked at Abyang charg in June 22nd, both times unsuccessfully. In July, nowever, Kingwicken attenuated to resover, the Motion passe but was buy served by his bentements in the

attacks made on the 4th and 17th July upon the main pass and other roads to the east. These were defeated, and on July 18th, the Japanese 12th Division took the offensive on the right and beat General Gerschelman badly at Chiao-tou. The remark of Sir Ian Hamilton on the Ai-yang-cheng action applies to all the above encounters:— "Some surprise may be felt at the tactics employed by the Russians but such are the methods which appear to be habitually adopted

by their existing types of general."

Having thus beaten off Count Keller's attempts. Kuroki advanced in his turn, on July 31st, across the Lan-ho and mastered the range beyond after severe fighting on a front of 20 miles. On the right, towards the Taitzu river, the 12th Division surprised the Russian position at dawn and throughout the day the latter failed to recover it. On the left the Guards were held at the Yang-tzu-ling (on the Mandarin road to Liaoyang), and the 2nd Division in the centre incurred great risk, in helping the Guards, from a Russian division in their front; which, however, remained inert in reserve for fear, writes Major Home, of the Japanese "pushing in a wedge between the two Russian wings"! As Sir Ian Hamilton writes: "The one test the Japanese have not been subjected to is that of some bold, dashing initiative on the part of the enemy. This would have been supplied in full measure, on the afternoon of the 31st, had the Russians attacked the right of the 2nd Division with determination and in full force." Instead, the Russians retired, though Major Home "could see no reason for evacuating the position.....The General Officer Commanding was not on the field all day. I never saw an Army Corps staff officer on the field, the result being that there was nobody to give orders."

After the battle of July 31st Kuroki was within two marches of Liaoyang, the Fourth Army had reached Hsi-Mucheng, and the Second Army (on 3rd August) was at Hai-cheng. Now, writes Sir Ian Hamilton, "why Kuropatkin does not leave a screen in front of the Second and Fourth Armies, and fall in overwhelming force on General Kuroki's men, who are now nearest him and easily accessible, is a question historians will puzzle over." Sir W. Nicholson objects that "the Second and Fourth Armies were near enough to have brushed aside the screen, occupied Liaoyang, and possibly to sever Kuropatkin's communications." The position was somewhat like that in Bohemia in 1866. Kuropatkin allowed himself to be jammed in until, on the 1st September, he had no elbow room. The stand at Liaoyang was against his judgment, but, that being forced on him, he should not have followed Benedek, in acting, as Sir Ian Hamilton says, "by driblets," but should have concentrated against one or other of the opposing armies. Sir W. Nicholson thinks that transport difficulties were against an attack on Kuroki, though Major Home says that "at the end of June the Russians began to form trains of country carts, of which they are reported to have bought ten thousand." If, however, on this score, Kuroki was not as accessible as Sir Ian Hamilton (on the Japanese side) supposes, then says Major

Home (on the Russian side), the attack should have been along the road and the easy open country to the south, against Oku and Nodzu; while holding off Kuroki at the Motien passes.

## III.

From the 23rd August to the 5th September 1904 were fought the series of actions known as the Battle of Liaoyang. In our last we showed Kuropatkin neglecting his great opportunity of attacking one of the Japanese armies while containing the other. chance existed during the first fortnight of August, then came a week's torrential rain precluding all movement; when the skies cleared the toils closed. The Japanese dates were arranged to bring all the armies on a general front, in close co-operation round Liaoyang, by the 28th August. The First Army moved on the 23rd, the Second and Fourth Armies on the 26th August. Russians fell back fighting on their right, abandoned the fortified position of Aushantien, and finally stood at the outer line of the Liaoyang defences, from Shaho on the railway, through Lang-tzushan on the Liaoyang-Motien-Mandarin road, to the Taitzu river at the junction of the Lanho. The latter section, from the road to the river, was held by General Bilderling, and, on the 23rd, the Guards Division of the First Army advanced slowly against his right flank (Lang-tzu-shan) by the road, repairing it as they went. This led Bilderling to strengthen his right; so, on the 26th, the 12th Division surprised his left. This was the case of the 31st July over again. For the second time the 12th Division by a night attack caught the Russians unprepared, and, as on the 31st July, this success caused the evacuation of the Russian position, though the latter were successfully holding the Guards on their right, and indeed the 2nd Division in the centre could make no progress till the success of the 12th Division. Thus by the night of the 27th August the Russians were driven across the Tang-ho by the First Army, but, up to the 31st, the Second and Fourth Armies were completely checked on the Russian right and centre. So on the 28th the First Army was ordered to cross the Taitzu river and threaten Kuropatkin's retreat. This was done by the 31st August and the Russian right and centre then fell back on Liaoyang, Stakelberg's corps on the railway being withdrawn across the river to fall on Kuroki's outer flank. Kuroki had only half his army, the other half being engaged in helping the Fourth Army, so his position on the 1st-3rd September was perilous. This was Kuropatkin's second chance, had he but sufficient elbow room. The Japanese Chief of the Staff told Sir Ian Hamilton later that "Kuropatkin determined to retire on the night of the 31st," and certainly he was then sending off trains and burning magazines. But first he made a bid for success which was frustrated, partly by the exhaustion of Stakelberg's corps, on which Colonel Waters lays great stress, and partly by the disaster for which Orlov was disgraced. Orlov's division from Yentai was ordered to combine its movements with Stakelberg's corps, whereas, says Colonel Waters

he "attacked on his own account and contrary to orders." His division was surprised in the high kaoliang crops and fled in a panic, and its losses were great; though how they were incurred, writes Sir Ian Hamilton, "unless his troops fell foul of one another in the kaoliang is a mystery." This failure finally decided Kuropatkin on a retreat which Japanese and British alike pronounced "masterly." The Japanese combination to cut him off failed; "no troops in the world who had been through what they had," writes Sir Ian Hamilton, "but would have hesitated to come to close quarters with those retiring Russians.....They were very fierce and full of fight and they looked most formidable." The Russians, writes Colonel Home, "left no prisoners and but few stores in Marshal Oyama's hands." It was a barren victory.

To the remaining operations, from October 1904 to May 1905, we cannot afford much space. The strategical interest ends with the failure of the great enveloping movement on Liaoyang. Kuropatkin, who was forced to stand there by the Emperor, evaded that envelopment with great skill. Thereafter we have only the face-to-face struggle of giants. For the adverse result of that struggle the Russian Government was again partly responsible, and partly the surrender of Port Arthur by Stoessel a month too early. Kuropatkin was allowed no time to organise success behind the Shaho and Hun-ho. St. Petersburg required, as before mentioned, "one victory before winter sets in," so Kuropatkin, defeated on 6th September, had to advance again across the Shaho on October 6th. Each army then sought the other's right flank, and, says Sir Ian Hamilton, a Japanese "success in the neighbourhood of the railway would be infinitely more telling than a Russian success in the mountains to the east." Yet Kuropatkin's only chance was in the east, and it was good. The Japanese dispositions after Liaoyang were such that all Sir Ian Hamilton can "urge in their favour is that great liberties are allowable immediately after a great victory." The communications of the First Army. on the Japanese right, were in prolongation of their right behind the Taitzu river, covered by one brigade dangerously advanced and isolated at Ping-tai-tzu. This the Russians surrounded by the 7th October, but it slipped away that night to Pen-hsi-hu, "an excellent beginning for the Japanese and a very bad one for the Russians who certainly lost a great chance." However, the Russian left wing, followed and again surrounded this brigade, then reinforced by the 12th Division, at Pen-hsi-hu on the 9th. A little energy and the Japanese right would have been forced, their communications cut at Chiao-tou across the Taitzu, and Oyama would have had to conform abandoning his advance on his left. But, writes Sir Ian Hamilton, "the remarkable want of appreciation of time as a prime factor in warfare, which is such a thoroughly Russian characteristic," led to the leisurely proceedings and "disconnected attacks" described, on the Russian side, by Colonel Waters—who, by the way, dates two days late. He describes Stakelberg as being still at the

form of strategy was, in nine cases out of ten, superior. NAPOLEON himself has told us so, and we have the record of his many successes to add weight to his words. But this superiority, it must be remembered, was mainly due to the difficulties which a General of that period, on exterior lines, had in communicating with his various columns, and to the fact that, without free communication, it was almost impossible for him, owing to the want of an established system of training for staff officers, to secure that co-operation from his subordinate commanders by which alone success can be attained.

Times, however, change. The middle of the nineteenth century witnessed the advent of inventions which revolutionized the world, and altered many preconceived ideas on the methods of waging war. In the front rank of those changes came the altered circumstances of a force on exterior lines, and MOLTKE was among the first to realize that the telegraph and railroad had swept away the main objections to this form of advance. At the same time the growing size of armies was making it increasingly hard to feed, or to deploy, in a confined space, the hosts of which they were now composed, both of which facts detracted from the merits of a single line of advance.

When, therefore, coupled with the above considerations, we remember that in 1869, when MOLTKE wrote his "Instructions for Superior Commanders", he had the success of his 1866 campaign to support him, we can see that he had good grounds for asserting that a concentration on the battlefield offers the best chances of success.

That all the advantages of interior lines had passed away, though, cannot be admitted; for it is at least open to question whether much of the Prussian success in 1866 was not due to the unreadiness of the Austrians, and whether BENEDEK did not throw away an opportunity of defeating his enemy in detail when he marched against Frederick Charles, who was furthest away from him, instead of hurling his whole strength against the army of the Crown Prince.

In the forty years which have elapsed since that war, modern inventions have continued to make things easier for a force on exterior lines, but it would still appear that, though the dangers of that form of advance have been reduced, they have by no means disappeared, and it will therefore be of interest to examine closely the merits and de-merits of both exterior and interior lines as they exist at the present day. For the sake of simplicity it is proposed to set down in order, and to discuss, the advantages and disadvantages of each method in turn.

Dealing first then with exterior lines, the advantages seem to be:—

(1) At the beginning of a war, their advantage will be especially marked if the enemy has a salient frontier. By using exterior lines in this case all railways leading to both sides of the salient can be made use of for the initial deployment—a point of considerable importance

now that a little time gained at the outset may mean the winning of the campaign. Also, if an advance is made from both sides of the salient, the enemy may be tempted to split up his forces to watch all avenues approach, and so be strong nowhere.

(2) It is easier to feed large armies when they are not concen-

trated.

(3) During the advance, it is easier to surprise the enemy, as he cannot tell where the point of concentration will be, and he will be filled with doubt and uncertainty in

consequence.

(4) If the enemy is surprised, an attack from different directions will confuse the hostile commander, while the fact of feeling caught in a net will upset the morale of his troops.

(5) Exterior lines facilitate development of an army on the battlefield, which experience teaches to be the best

form of tactics.

(6) If the enemy tries to evade the blow, it is comparatively easy to alter the point of concentration.

The disadvantages of exterior lines, on the other hand, appear

to be:-

(1) If the enemy is well organized and well led, he still has a chance of defeating the converging columns in detail. With regard to this point it is true that the strength of modern firearms has made it easier for a small force to hold out till reinforced, and that the telegraph has facilitated the calling up of reinforcements, as it also has made it possible for one of the other columns to relieve the pressure by immediately attacking the enemy elsewhere, but it must be remembered that the enemy, also by means of the telegraph, will probably hear of every move against him as soon as it is made, and that there is therefore less chance than ever of his being surprised, and more chance than ever of his being able to throw his whole weight against an isolated column. Though the isolated General can now wire for reinforcements, their rate of marching to his relief will be little quicker to-day than it was a hundred years ago.

2. Much confidence has to be placed on subordinate commanders. Similarity of education has made it more likely that subordinate leaders will be men who can be thoroughly trusted to do what the General-in-Chief would desire, but the man with the biggest reputation is not always the man who will do best

when the critical moment arrives.

3. Superior numbers are essential for complete envelopment or subsequent successful pursuit.



Turning to interior lines, the advantages are:-

(a) The General-in-Chief has his whole force under his immediate command, and, with speedy information, should be able to crush the converging columns in detail.

(b) If he is surprised, all his troops are at hand.

The disadvantages of interior lines are :---

(a) The difficulties of feeding a large concentrated army acting on the offensive. The number of parallel and neighbouring railways in Europe might obviate the difficulty in a continental campaign, but the question of water would often be a difficult one.

(b) It is hard to deploy a large force quickly from a confined space, unless its organization is perfect.

(c) All successful actions now-a-days will, as a rule, consist of a turning or enveloping movement, combined with a frontal attack. If, therefore, a force is not on exterior lines before an action, this will necessitate a flank march in the face of the enemy, which will destroy all chance of surprise, will delay the attack, and will be, above all, a risky move.

(d) If the converging columns cannot be kept separated, the force on interior lines will probably be crushed.

(c) It is hard for a concentrated army to conceal its intentions, as, owing to the difficulties of manœuvre, it is generally compelled to march straight to its front.

Summing up these various theoretical advantages and disadvantages, it would appear that the army on exterior lines is now-a-days in the best position, for whereas half the advantages which can be claimed for interior lines are in reality but compensations for weakness, exterior lines seem to give added power to their possessor, in that they facilitate supply and the movements of troops, increase the chances of being able to use that most powerful of weapons—surprise, and produce the best tactical employment of fire-action.

Unsupported theories, however, are always dangerous, and it will be well to consider how the above were borne out by the most modern example of exterior *versus* interior lines—the Russo-Japanese War.

In this war we saw the nation with the largest standing army in the world, engaged with a new and small isolated power. The former however were unready and without a plan of campaign; the latter were prepared in every way for the task for which they had been arming so long, namely, to re-capture PORT ARTHUR, to secure their footing in KOREA, and to drive the RUSSIANS out of MANCHURIA.

Unreadiness and ask of transports would, from the first, have made any invasion of JAPAN by RUSSIA an impossibility, and we need, therefore, only concern ourselves with the operations on the mainland. Had JAPAN not secured working command of the sea at the outset, she would have had only one hazardous line of land

miles in length." So Kuropatkin's whole attention turned towards Nogi's army, when he discovered it on the 3rd March with its left. actually on the Mukden-Hsin-mintun road on his right rear. Then says Colonel Hume, "the 16th Army Corps, the Russian general reserve, advanced to meet it and a big fight took place, the Russian Divisions advancing one after the other and being successively defeated." The italics are ours, to show how ill Kuropatkin was Thus the Japanese advance on the Russian communications successfully continued till Kuropatkin drew troops against its flank from before the Second Army. Colonel Haldane writes that Nogi must then have felt the danger of this counterstroke. Had it "been successfully carried out the Third Army would have been completely cut off and probably almost annihilated." But Oyama sent up his reserve, the 3rd Division, which "arrived just in time and in the bloody fight of Yu-hung-tun the (Russian) attempt was foiled," and at last, on March 10th, the Third Army reached the Northern Tombs, on the Russian line of retreat. Kuropatkin had already commenced to move on the 7th March so the other Japanese armies could then advance; and "on the evening of the 10th March," writes Colonel Birkbeck, "the 9th Division of the Third Army) opened communication by signal with the First Army," across the retiring Russian columns.

Why, then, did the Japanese envelopment fail? "Owing to the failure of the Yalu army to force its way through the mountains to the east; the Japanese would have done better to have put more strength on their left (west), and to have pinned their faith on Nogi cutting the Mukden-Tiehling road." They had not sufficient superiority for a double outflanking movement; and moreover their anxiety for their weakened centre caused "the tendency of the Second Army rather to lean towards the south than towards the north," and "caused the general reserve of the whole field force in Manchuria to be placed behind the Second Army's right." Colonel Haldane justly observes that "rarely, if ever, have the Japanese brought overwhelming strength to bear at that point where success if won is most complete." At Mukden as at Liaoyang opportunity was lost which could not again be hoped for, for the Russians had meanwhile learned war and acquired wisdom. When the opposing forces faced each other on the Sungari in the autumn of 1905, the Japanese returns show, says the Army and Navy Gazette of 24th October last, "that the Japanese loss in killed, wounded and sick had been 554,885, and they had sent back 320,000 sick and wounded men from Manchuria to Japan." They had then, writes Captain Sedgwick (The Russo-Japanese War on Land), only 350,000 men to oppose 500,000 Russians actually then available for field operations; and, according to Colonel Birkbeck, "the heavy loss of trained officers had materially reduced the efficiency of the army as a fighting machine." In fact, Japan was at the end of her tether; "men were of course forthcoming," says Captain Sedgwick, "but hundreds of thousands of men are not soldiers, nor hundreds of armies in that battle one by one. The RUSSIANS, however, were badly organized and badly led; the difficulties of quick deployment when concentrated were well shown; and both these golden

opportunities were allowed to slip away.

Turning to the question of supplies, the two lines which the Japanese were able to use when concentrated after Liaoyang (the Yalu line and the railway and road from the south-west) obviated many of the difficulties which they would have experienced with only one line. The Russians, it is true, managed to feed themselves by their single line of railway, but this was greatly due to the fact that most of their supplies came from Mongolia, and to the strictly defensive attitude which they displayed throughout the war. The greater ease with which an army can be enveloped by exterior than by interior lines, and the greater manæeuvring power of the former, were clearly shown throughout the war; but the failure of the Japanese to reap the fruits of victory also showed the necessity of superior numbers for this form of attack.

To sum up, the war may be said to have shown us that exterior lines, in addition to solving the difficulties of supply, offer greater chances of enveloping the enemy, but that there is no magic in this form of strategy, and that the risk of defeat in detail is still a very real one. For interior lines to succeed, now that armies are so large, the war has proved that the force must be exceptionally mobile, and its organization perfect, so that it can be deployed quickly and take

advantage of an opportunity the moment it occurs.

The war, as a whole, may be said to be disappointing, in that it did not establish beyond question the superiority of either form. The Japanese were eventually successful, but like the campaigns of 1815, 1866, and 1870, this may, by the adherents of interior lines, be attributed in great measure to the mistakes, unreadiness, or incompetence, of the opposing side. It is indeed unfortunate that in each instance in history of the success of exterior lines, the victory should thus be open to criticism, but it is to be noted that the successes of interior lines have on the other hand nearly always been attributable to a similar cause. To take only one instance, it is indisputable that the success of the Confederates in 1862 was chiefly due to the want of co-operation of the various NORTHERN columns, and to civilian interference with all the FEDERAL general's plans.

These facts, however, are in themselves not without their lesson, which is that victory will be on the side of him who, whether on exterior or interior lines, makes the fewest mistakes. Let us therefore remember that success in war depends, not on employing any particular form of strategy, but on a good initial plan of campaign, carried out with determination by a capable General, who, backed up by a well-trained army and an united people never lets a

mistake of the enemy remain unpunished.

## THE RUSSO-JAPANESE WAR.

BY COLONEL L. J. H. GREY, C.S.I.

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I.

The War Office publication—entitled The Russo-Japanese War, British Officers' Reports—is in some respects disappointing. The reports themselves are, on the Japanese side, excellent, and they occupy two portly volumes. Those on the Russian side are meagre, and the smaller third volume which contains them is largely composed of other matter than the operations themselves. For instance, there are 29 pages of appendix showing the distribution of Russian troops on various dates, and 198 pages of notes on subjects ranging from balloons and bivouacs to postal service and water-supply, to veterinary and remount statistics; in all 227 out of the total 303 pages. Now the first two volumes also contain 197 pages of such extraneous matter, but they devote 1,161 pages to the Japanese operations as compared with only 76 pages in the third volume treating of the operations on the Russian side. This disparity extends also to the plates, of which there are 111 for the first two volumes to only 10 for the third volume. In speaking of extraneous matter we do not mean "superfluous." On the contrary most of it is interesting—some of it very important. What we lament is the lack of information on the Russian operations in the field. We have had already many books describing the Japanese successes: what we need is an account of the Russian failures. In this latter respect the War Office volumes are unsatisfying, with the exception of Colonel Waters' report on the battle of the Shaho; and for full particulars we must await the forthcoming translation of General Kuropatkin's book.

Why did the Russians fail? It is not enough to say, with Colonel Waters after he witnessed the defeat of Telissu, "The strong impression left on my mind was that the Japanese were the better men." The material was the same on both sides—Tartars both—and considering Russian deeds in the past the "better men." theory seems as inadequate as is that of superior Japanese artillery. Colonel Waters writes that "the Japanese at Wa-fang-kou (Telissu) owed their victory really to their artillery, which shows how essential it is to have that arm very highly trained." Sir Ian Hamilton, however, shows that the Russian arm was superior. He writes that he has noticed numerous very misleading remarks in European papers about the Russian artillery's inferiority. "This is indeed a strange error."

No, the difference of the two armies was in the leading; from the Czar and Viceroy down to Generals of Brigade there seems to have been a discord, an indifference to the common object, enough to paralyse any army. So different from the Japanese, with whom, writes Colonel Haldane, a "factor which has brought success is their strong sense of subordination.....It is this spirit of self-effacement for the public weal, mingled with fervent patriotism, which has won Japan her long series of victories." It was not until General Linevitch took supreme command on the 17th March 1905, of whom Colonel Waters writes that, in 1904, his "advent to command the First Army was hailed with delight as he was said never to have a sharp word for anybody"—not till then that there seems to have been any real loyalty from the Generals or whole-hearted support by the Government. Moreover, not till then, at Harbin, had the Russian Chief the requisite superiority for the offensive. Then, however, the revolutionaries crippled Russia at the very moment when Japan was exhausted; so lack of patriotism condemned the former to defeat up to the last-in America as in Manchuria.

Colonel Waters' reports, in Volume III, on the Russian Plan of Campaign, and the distribution of the Russian forces, abundantly show that Kuropatkin never had a fair chance. His plan of campaign, settled with the Czar in January 1904, was, before he reached the front in March, "thrown overboard and a series of disjointed operations undertaken." Kuropatkin's plan was "that the Russian army should first of all be concentrated in Northern Manchuria, and not assume the offensive until sufficient numbers had been assembled" at Harbin. Instead of this the forces "were scattered over an immense area, everywhere too weak. Thus they were beaten in detail" and "demoralised by the incessant retreats necessitated." Even Kuropatkin's reserve which "he meant to keep under his own hand until his concentration should be completed were half of them thoroughly defeated before two months had passed, owing to the plan of operations which was forced upon him." came the defeat of Zasulich on the Yalu; "the Viceroy, or St. Petersburg, or both, were responsible for having placed him there." Kuropatkin " was over-ruled" in this, but he had " ordered Zasulich not to accept battle"; nevertheless the Viceroy insisted. Next Stakelberg started to relieve Port Arthur, writes Major Home, "against the wishes of the Commander-in-Chief, in accordance with orders received from the Viceroy." Kuropatkin, says Colonel Waters, "was confident that the fortress could hold out until September at any rate, but he was over-ruled by the Viceroy." As we know, Port Arthur did hold out till the 5th January 1905, and could have held out a month longer and thus have allowed Kuropatkin to win at Mukden, by detaining Nogi's 60,000 troops. Holding that view about Port Arthur's safety Kuropatkin, after the Yalu, ordered the evacuation of Liaoyang on 8th May; but, writes Major Home, "this evacuation ceased on the 11th, it being said that the Czar had sent peremptory orders that the town was to be held at all costs."

Kuropatkin then hoped for a chance of dealing with Kuroki alone, failing which "he did not consider himself sufficiently powerful," says Colonel Waters, "to overcome a combined advance from the east and from the south on the part of both Kuroki and Oku. Yet he awaited it, while still holding this opinion" under pressure from above. And so it went on. After defeat and retreat from Liaoyang in August, it was pronounced in October "urgently necessary for the army to win one victory before the winter sets in," and it advanced to ruin on the Shaho. Read "urgently necessary for the dynasty" and we understand why Kuropatkin sacrificed his army then, and again in January on the Hun-ho, at Hei-kou-tai. At the Yalu, Telissu, Liaoyang, Shaho, Hun-ho, as at Sedan, it was political needs against military judgment—the welfare of a dynasty against that of a nation.

### II.

For the purpose of the student the War Office Reports on the Russo-Japanese war need to be strung together in a complete historical narrative. That of Major Home, in the third or Russian volume, comprises only the events up to the 15th August 1904; in the Japanese volumes the summaries by Sir Ian Hamilton and Colonel Haldane deal only with particular periods, up to September 1904, for the First Army, and with the events of May 1904 for the Second Army. There is a Diary of the War, merely five and-a-half pages of dates, and among all the 121 maps of the three volumes there is none which affords a general view of the movements on either side—such a skeleton map as should accompany a complete historical narrative for the instruction of students.

War was declared on the 5th February 1904; on the 8th the Japanese landing in Chemulpo commenced, and by the 16th their command of the sea was established and troops poured into Korea. By the 28th February the First Army under Kuroki (Guards, 2nd and 12th Divisions) was complete about Pinyang; a month later at Wiju it faced Zasulich's corps of observation on the Yalu. There the Viceroy caused that small force to fight and afford to the Japanese their first victory, on the 1st May. The 20,000 Russians thus put out of action did not re-appear till they faced the Guards again on the Tung-ho, on the 26th August. Almost without effort, therefore, the First Army was able to master the passes south of the Lan river, including the famous Motien-Ling (Ling = pass), on the Mandarin road to Liaoyang, by the 27th June. Meanwhile the Yalu victory was followed by the despatch of a Second Army, under Oku, against Port Arthur. Assembled at Chinampo (the port of Pinyang), the 1st, 3rd and 4th Divisions crossed the Bay and landed east of Talienwan by the 10th May, cut off the communications of Port Arthur with the north, and, on the 27th May, drove in the Russian garrison at the battle of Nanshan and invested Port Arthur. While this was doing, the 10th Division landed at Takushan, further up the Bay of Korea, on the 20th May, to occupy the passes west of tho First Army and cover its left. By the 27th June this force had mastered the Fenshui-Ling, and, joined later by the 10th Reserve Brigade and by the 5th Division, it became Nodzu's Fourth Army. (Fenshui means watershed and is applied to sundry passes on this

range.)

First, however, the 5th Division had helped Oku at Telissu and Ta-shih-chiao. The 1st Division, joined by the 11th became Nogi's Third Army besieging Port Arthur, while Oku and the Second Army (now the 3rd, 4th and 5th Divisions) turned eastward against Stakelberg at Telissu on the 14th June. Here again the Viceroy caused 20,000 Russian troops to be put out of action. Stakelberg had 34,000 first and last; but eight battalions arrived on the 15th after the Russians were outflanked and practically defeated, while eight battalions were in reserve at the wrong place and only covered the retreat. Such was the commencement, at the Yalu and here, of the "defeat in detail" of the Russian forces "scattered over an immense area, everywhere too weak"—as before quoted from Colonel Waters.

Thus in the end of June, the First, Fourth, and Second Japanese Armics were getting into line; the two latter advancing respectively on Hsi-Mu-Cheng and Ta-shih-chiao, and the First Army to the Lan Valley, by the end of July. On the left Oku attacked Ta-shih-chiao without success on July 24th, but the Russians withdrew that night. Thus Oku was able to send the 5th Division to Nodzu on the 28th July, and on the 30th to lend another brigade for the attack of the Fourth Army on Hsi-Mutheng. Such co-operation was a feature of the Japanese system, and the 10th Division had before been assisted in taking the Fenshui-Ling, on June 27th, by a brigade of the Guards from the First Army. That brigade was recalled by Kuroki on July 22nd for his own battle of the 31st July, in which he mastered the left bank of the Lan-ho. It was replaced, as above said, by the 10th Reserve Brigade on June 3rd, and by the 5th Division on the 28th July. Thus by the first week in August the Japanese armies stood in Jine from Yu-shu-lin-tzu, on a branch of the Taitzu river, to Haicheng on the railway. The Russians had not meanwhile remained entirely on the defensive. After the defeats in detail at the Yalu and Telissu incurred under the Viceroy's orders Kuropatkin wished to concentrate. As before said he endeavoured to do so in North Manchuria, and commenced evacuating Liaoyang on the 8th May after the Yalu, but the Czar stopped that on the 11th, so the concentration was determined at Liaoyang. To the south, then, Kuropatkin had only to retard the Second and Fourth Japanese Armies; his danger lay to the east from the First Army moving on his flank. While matters in May and June were taken out of his hands he could do little to prevent Kuroki from occupying the Motien range, though the Japanese 12th Division. on Kuroki's right, was opposed at Saimachi on June 7th and attacked at Ai-yang-cheng on June 22nd, both times unsuccessfully. In July, however, Kuropatkin attempted to recover Motien pass, but was badly served by his lieutenants in the

attacks made on the 4th and 17th July upon the main pass and other roads to the east. These were defeated, and on July 18th, the Japanese 12th Division took the offensive on the right and beat General Gerschelman badly at Chiao tou. The remark of Sir Ian Hamilton on the Ai-yang-cheng action applies to all the above encounters:— "Some surprise may be felt at the tactics employed by the Russians but such are the methods which appear to be habitually adopted

by their existing types of general."

Having thus beaten off Count Keller's attempts, Kuroki advanced in his turn, on July 31st, across the Lan-ho and mastered the range beyond after severe fighting on a front of 20 miles. On the right, towards the Taitzu river, the 12th Division surprised the Russian position at dawn and throughout the day the latter failed to On the left the Guards were held at the Yang-tzu-ling (on the Mandarin road to Liaoyang), and the 2nd Division in the centre incurred great risk, in helping the Guards, from a Russian division in their front; which, however, remained inert in reserve for fear, writes Major Home, of the Japanese "pushing in a wedge between the two Russian wings"! As Sir Ian Hamilton writes: "The one test the Japanese have not been subjected to is that of some bold, dashing initiative on the part of the enemy. This would have been supplied in full measure, on the afternoon of the 31st. had the Russians attacked the right of the 2nd Division with determination and in full force." Instead, the Russians retired, though Major Home "could see no reason for evacuating the position.....The General Officer Commanding was not on the field all day. I never saw an Army Corps staff officer on the field, the result being that there was nobody to give orders."

After the battle of July 31st Kuroki was within two marches of Liaoyang, the Fourth Army had reached Hsi-Mucheng, and the Second Army (on 3rd August) was at Hai-cheng. Now, writes Sir Ian Hamilton, "why Kuropatkin does not leave a screen in front of the Second and Fourth Armies, and fall in overwhelming force on General Kuroki's men, who are now nearest him and easily accessible, is a question historians will puzzle over." Sir W. Nicholson objects that "the Second and Fourth Armies were near enough to have brushed aside the screen, occupied Liaoyang, and possibly to sever Kuropatkin's communications." The position was somewhat like that in Bohemia in 1866. Kuropatkin allowed himself to be jammed in until, on the 1st September, he had no elbow room. The stand at Liaoyang was against his judgment, but, that being forced on him. he should not have followed Benedek, in acting, as Sir Ian Hamilton says, "by driblets," but should have concentrated against one or other of the opposing armies. Sir W. Nicholson thinks that transport difficulties were against an attack on Kuroki, though Major Home says that "at the end of June the Russians began to form trains of country carts, of which they are reported to have bought ten thousand." If, however, on this score, Kuroki was not as accessible as Sir Ian Hamilton (on the Japanese side) supposes, then says Major

Home (on the Russian side), the attack should have been along the road and the easy open country to the south, against Oku and Nodzu; while holding off Kuroki at the Motien passes.

## III.

From the 23rd August to the 5th September 1904 were fought the series of actions known as the Battle of Liaoyang. In our last we showed Kuropatkin neglecting his great opportunity of attacking one of the Japanese armies while containing the other. chance existed during the first fortnight of August, then came a week's torrential rain precluding all movement; when the skies cleared the toils closed. The Japanese dates were arranged to bring all the armies on a general front, in close co-operation round Liaoyang, by the 28th August. The First Army moved on the 23rd, the Second and Fourth Armies on the 26th August. Russians fell back fighting on their right, abandoned the fortified position of Aushantien, and finally stood at the outer line of the Liaoyang defences, from Shaho on the railway, through Lang-tzushan on the Liaoyang-Motien-Mandarin road, to the Taitzu river at the junction of the Lanho. The latter section, from the road to the river, was held by General Bilderling, and, on the 23rd, the Guards Division of the First Army advanced slowly against his right flank (Lang-tzu-shan) by the road, repairing it as they went. This led Bilderling to strengthen his right; so, on the 26th, the 12th Division surprised his left. This was the case of the 31st July over again. For the second time the 12th Division by a night attack caught the Russians unprepared, and, as on the 31st July, this success caused the evacuation of the Russian position, though the latter were successfully holding the Guards on their right, and indeed the 2nd Division in the centre could make no progress till the success of the 12th Division. Thus by the night of the 27th August the Russians were driven across the Tang-ho by the First Army, but, up to the 31st, the Second and Fourth Armies were completely checked on the Russian right and centre. So on the 28th the First Army was ordered to cross the Taitzu river and threaten Kuropatkin's retreat. This was done by the 31st August and the Russian right and centre then fell back on Liaoyang, Stakelberg's corps on the railway being withdrawn across the river to fall on Kuroki's outer flank. Kuroki had only half his army, the other half being engaged in helping the Fourth Army, so his position on the 1st-3rd September was perilous. This was Kuropatkin's second chance, had he but sufficient elbow The Japanese Chief of the Staff told Sir Ian Hamilton later that "Kuropatkin determined to retire on the night of the 31st," and certainly he was then sending off trains and burning magazines. But first he made a bid for success which was frustrated, partly by the exhaustion of Stakelberg's corps, on which Colonel Waters lays great stress, and partly by the disaster for which Orlov was dis-Orlov's division from Yentai was ordered to combine its movements with Stakelberg's corps, whereas, says Colonel Waters

he "attacked on his own account and contrary to orders." His division was surprised in the high kaoliang crops and fled in a panic, and its losses were great; though how they were incurred, writes Sir Ian Hamilton, "unless his troops fell foul of one another in the kaoliang is a mystery." This failure finally decided Kuropatkin on a retreat which Japanese and British alike pronounced "masterly." The Japanese combination to cut him off failed: "no troops in the world who had been through what they had," writes Sir Ian Hamilton, "but would have hesitated to come to close quarters with those retiring Russians.....They were very fierce and full of fight and they looked most formidable." The Russians, writes Colonel Home, "left no prisoners and but few stores in Marshal Oyama's hands." It was a barren victory.

To the remaining operations, from October 1904 to May 1905, we cannot afford much space. The strategical interest ends with the failure of the great enveloping movement on Liaoyang. Kuropatkin, who was forced to stand there by the Emperor, evaded that envelopment with great skill. Thereafter we have only the face-to-face struggle of giants. For the adverse result of that struggle the Russian Government was again partly responsible, and partly the surrender of Port Arthur by Stoessel a month too early. Kuropatkin was allowed no time to organise success behind the Shaho and Hun-ho. St. Petersburg required, as before mentioned, "one victory before winter sets in," so Kuropatkin, defeated on 6th September, had to advance again across the Shaho on October 6th. Each army then sought the other's right flank, and, says Sir Ian Hamilton, a Japanese "success in the neighbourhood of the railway would be infinitely more telling than a Russian success in the mountains to the east." Yet Kuropatkin's only chance was in the east, and it was good. The Japanese dispositions after Liaoyang were such that all Sir Ian Hamilton can "urge in their favour is that great liberties are allowable immediately after a great victory." The communications of the First Army, on the Japanese right, were in prolongation of their right behind the Taitzu river, covered by one brigade dangerously advanced and isolated at Ping-tai-tzu. This the Russians surrounded by the 7th October, but it slipped away that night to Pen-hsi-hu, "an excellent beginning for the Japanese and a very bad one for the Russians who certainly lost a great chance." However, the Russian left wing, followed and again surrounded this brigade, then reinforced by the 12th Division, at Pen-hsi-hu on the 9th. A little energy and the Japanese right would have been forced, their communications cut at Chiao-tou across the Taitzu, and Oyama would have had to conform abandoning his advance on his left. But, writes Sir Ian Hamilton, "the remarkable want of appreciation of time as a prime factor in warfare, which is such a thoroughly Russian characteristic," led to the leisurely proceedings and "disconnected attacks" described, on the Russian side, by Colonel Waters-who, by the way, dates two days late. He describes Stakelberg as being still at the "practice of continuing shrapnel fire until their troops have actually reached the enemy's works regardless of losses caused to their own infantry, the defenders are prevented from using their rifles with the confidence which they would have if they were able to fire through loop-holes." Partly, no doubt, the Japanese economy of artillery fire was due to difficulties of supply. But certainly it contrasted favourably with the Russian waste of ammunition and wearing out of guns, as noticed by all our attachés. Very pithy is Kuropatkin's order on this subject found by the Japanese at Liaoyang: "The enemy fear the ammunition yet to be fired far more than the rounds already fired or being fired."

This summary has been written in the hope of serving those who have not time or opportunity to study the War Office volumes. As regards facts it is I hope accurate, as far as it goes. As regards the lessons of the war it is, of course, far from exhaustive of the comments and deductions contained in the excellent reports of our attachés, but I have endeavoured to bring out the main points accounting for

the Japanese success and the Russian failure.

the King had waited to see what became of the Crown Prince at All that can Horenowes before pushing his attack on the Bistritz. be said is that "Russian strategy was greatly hampered by dual control," and, continues Major Home, when the Viceroy's views were forced upon General Kuropatkin they were only half-heartedly carried out by the subordinate Generals. Colonel Haldane believes that "the temptation to strike the slender flank of the Japanese before the arrival of General Nogi's Army" (the Third Army from Port Arthur), "and cut their communications, had been too strong for General Kuropatkin or the subordinate commander on the right." It was not Kuropatkin but Grippenberg, supported by the Viceroy who made the useless attack. Still the General on Grippenberg's left would naturally have supported him but for the state of things described by Major Home. Grippenberg played directly into the hands of the Japanese, whose victory, writes Colonel Haldane, "far from being a barren one, was the direct cause of the greater one that shortly followed," namely, at Mukden.

#### IV.

After Port Arthur fell, on January 5th, 1905, Nogi's Third Army (now the 1st, 7th, and 9th Divisions) gradually concentrated at Hsiapen-ho, the junction of the Hun and Taitzu rivers. The 11th Division of that army marched to the Yalu to form, with one Reserve Division, the Yalu army; this was to turn the Russian left (east) flank at Mukden, while the Third Army outflanked them to the Mischenko's raid discovered the advance from Port Arthur of the Third Army early in January; hence Grippenberg's attack, viz., the battle of Hei-kou-tai, to anticipate Nogi's arrival. Mischenko was nearly cut off and lost, by Japanese accounts, 3,000 men; and reprisal raids by the Japanese cavalry against the Russian communication led to his being held back at Fu-ku-men to guard them. Thus, although the Russians had, according to Colonel Birkbeck, 25,000 cavalry, yet they failed to discover the importance of Nogi's march round the Russian right flank. Also the march of the Japanese 11th Division to the Yalu was supposed by the Russians to be that of the whole Third Army, which they therefore expected on their left flank. Up to the last moment this army was held back behind the Japanese left flank to complete the deception, and thus it was not seriously opposed till its fourth march on 2nd March had brought it well on the Russian flank. No doubt, writes Colonel Hume, "If the Third Army had been concentrated between the Hun and the Liao rivers its subsequent advance would have been easier and shorter; but to have done this would have meant making the Russians a present of the plan of campaign." Of the new Yalu army the Russians were not aware.

The Japanese advance on Mukden was fixed for the 23rd February 1905, as follows:—The Yalu army was to lead off on that date, to get to the Russian left rear by Fushun; the First Army, in touch with the above, was to attack the Russian left on the 26th;

it is a type we shall probably see more of in the near future—its characteristics being a mean between the above.

Hence we come to the conclusion that a flexible dirigible airship

is the most probable aerial enemy of our gunners.

4. Let us now consider what these airships will be capable of doing and under what conditions they will lay themselves open to attack by artillery.

Suggestions have been made that airships should be used for the

following purposes:—

- (i) Dainaging hostile troops and material by dropping explosives from a height.
- (ii) Demolitions at a distance.
- (iii) Transmission of despatches.
- (iv) Destroying hostile aerial craft.

(v) Reconnaissance.

Taking these headings in order-

(i) Anyone who has tried to drop a stone from a bridge on to objects floating down stream beneath him knows how difficult it is to succeed. The task is even more difficult when the object is stationary and the operator is moving. Judge then the extreme unlikelihood of any one being able to throw a projectile on to, say, a howitzer emplacement 15 yards by 12 yards from an airship swaying 800 feet above!

"La Patrie" carried 30 torpedoes weighing 22 lbs. apiece, but it must be remembered that she was only an

experiment and very costly.

After taking into consideration expense, portability and rapidity in filling—all of vital military importance—the reader will realise that we cannot hope for our modern military airship to carry a greater weight of ammunition than 600 lbs. Of this amount a very large percentage must always be kept in hand to meet an unexpected attack by a hostile airship. Thus owing to lack of ammunition and the great difficulty of making effective use of it, it is improbable that an airship will be employed for this purpose except in very exceptional circumstances.

(ii) It rarely happens that any work or material which is worth destroying is left without a guard. A thorough demolition of, for instance, a bridge is impossible from a height, though bombs thrown on to it, it is true, may cause temporary inconvenience. To complete the work of destruction it would be necessary for the crew of the airship to effect a landing in face of the rifle fire of the detachment guarding the bridge whom it

would be difficult to surprise.

(iii) The transmission of despatches is, of course, a duty which an airship can capably perform. The question,

however, arises whether it is sound policy to utilise an airship for work which can be quite as effectively carried out by the other arms, in the shape of mounted orderlies or telephone companies. In cases where it has been found impossible to lay a telephone line, airships may undoubtedly be used with advantage in lieu; but it is unlikely that troops who could not produce a telephone line would find themselves accompanied by an airship.

A suggestion has been made in a daily paper that they should be used by generals commanding two combining armies preparatory to making a united movement, who would thus obtain for themselves an exact bird's-eye view of the situation. This is true enough, but in the present state of airship manufacture no general staff would allow their chief to risk himself in one at a critical state of affairs.

(iv) It goes without saying that an airship must always be prepared to defend itself against or to attack a hostile airship. Their tactics will be to ascend and endeavour to get above their enemy whence they can drop explosives—an adequate supply of which must always be kept in hand for this purpose.

(v) Lastly we come to reconnaissance—a reconnaissance embracing protective reconnaissance and watching a frontier, in addition to the other duties generally

understood by the term.

It is unnecessary to dilate on the ease and thoroughness with which an airship can, in a very rapid survey, take in the whole of the enemy's dispositions and movements. The only difficulty seems to be how to communicate the information obtained to the staff. A code of flags flying from a tail might be used, but there is a very considerable danger of the enemy being able to read the code. Wireless telegraphy or telephony seem eminently adapted to the purpose, and at the present rate of progress will have been sufficiently perfected for field work to be used extensively by the time a suitable military airship will have been built.

By this means ample warning of the approach of hostile patrols can be transmitted to the threatened sections of the outpost line.

5 Airships can also be used in co-operation with artillery—a duty which really belongs to the captive balloon—when they can observe effect of fire and discover good targets (invisible from the ground) on to which fire may be turned.

For this purpose all military maps should be squared and squares

numbered.

A captive balloon or airship intelligently co-operating with

artillery may save a great waste of ammunition.

6. We thus come to the question of what means should be taken to destroy or operate against these airships. It seems generally



thousands of soldiers an army, without organisation or trained officers and non-commissioned officers." The Russian army, before so inferior, was at last not only superior in numbers but now at least equal in the above respects. It had learnt war by bitter experience, and was full of confidence in Linevitch, with whom Kuropatkin had changed places. It is probable that Roosevelt's intervention came in the nick of time for the Japanese; and that only domestic trouble caused Russia to forego her fair prospect of retrieving disasters which had been the just punishment of ignorant self-confidence, administrative inaptness, military mismanagement, and the fatal interference of politics in war.

V.

"Excluding the Cossack who is of very poor stuff (a); the Russian soldier has many admirable qualities (b); but he wants much better leadership" (c). So write Colonel Waters and Major Home, who were on the Russian side in the Russo-Japanese War, and the points I have noted—(a), (b) and (c)—are the burden of the reports of all the British officers on both sides throughout the late war in Manchuria. The Russians had 25,000 cavalry a great numerical superiority, but this cavalry "was pretty well worthless in 1904," "it did not do its reconnaissance and scouting even fairly well" (Colonel Waters); "for offensive purposes the Russian cavalry was practically useless" (Major Home); "the Russian cavalry seem to move with indecision" (a Japanese officer to Captain Vincent); "the inactivity of the Russian cavalry is difficult to account for ....it is incomprehensible, unless it be that the Russian dragoon has been so emasculated by his training as to have lost all the elun and enterprise of the true cavalry soldier" (Colonel Birkbeck). For instances in support of these indictments see the British reports on the subject of the Russian cavalry in Korea, at the Yalu, at Telissu; see Sir Ian Hamilton's scathing remarks regarding Kuroki's unobserved and unopposed passage of the Taitzu in the battle of Liaoyang, and on "the deplorable Russian cavalry fiasco" at Pen-hsi-hu during the battle of the Shaho; see also the account of Mischenko's feeble raid on Ying-kou in January 1905, and of his failure to detect Nogi's Third Army while it was reaching the Russian right flank at Mukden, practically unresisted. Thus was Kuropatkin handicapped in the condition, through bad training and bad leading, of his most powerful arm.

"The outbreak of hostilities found the Russians unprepared," writes Major Home on their side: "they were in the midst of rearmament and reorganisation." Not only was the cavalry inefficient but, at first, the artillery also; "the majority of the batteries had only recently received the new gun, and neither officers nor men understood it. It was, I believe, a fact that many of the batteries had never fired their guns until they did so in action." The exposure, the bad shooting, the general mishandling of the Russian artillery in the earlier battles is the subject of much remark by the

Time shrapnel ranging will be employed, bursts being obtained against the silhouette of the airship. Owing to the impossibility of correctly estimating ranges and distances plus or minus in the air, flank observers as with howitzers will have to be employed though the laying will be direct.

The very fact of having flank observing parties prohibits rapid ranging and a rapid rate of fire cannot be sustained as the fuze and

angle of sight will be constantly altering.

7. The next consideration will be what steps we must take to engage her between C and C'.

Some sort of field mortar will doubtless be invented to fire at

angles of elevation above 50°.

It seems improbable that a practical field gun or howitzer will ever be invented which can be used at all angles of elevation.

It will, therefore, be necessary to use the field guns against airships as they approach and to use these mortars (I call them that for want of a better name) against them when the airships are vertically above or nearly so. In 1906 the German firm of Messrs. Ehrhardt brought out an experimental mortar mounted on a motor and capable of throwing a shell 1,800 yards. This, however, does not seem powerful enough and in all probability the motor mounting will have to be sacrificed in order to obtain a more powerful weapon.

In all probability this new field mortar when brought out will not have a maximum range less than 6,000 yards. These mortars will then be able to keep an airship at a height of over 18,000 feet. Even armed with prism binoculars an operator at this height would

be unable to obtain very accurate or detailed information.

8. What sort of ammunition should these mortar batteries carry? The most effective shell to use seems to be one with a very delicate percussion fuze which will burst in the gas after penetrating the envelope—the difficulty being to devise a sensitive enough fuze

which will be at the same time suitable for transport.

The general consensus of opinion seems, however, to be in favour of using shrapnel and plastering the gas bag with a hail of bullets. The top of the gas bag should be riddled so as to allow the gas to escape. The airship will not be more than temporarily disabled and the crew are unlikely to be killed by their fall as would be the case with a successful shell shot, the descent being very much less rapid. In the event of a miss or whilst trying to find the range it would be most unpleasant for the mortar detachments to have their own shell and shrapnel bullets falling vertically upon them!

In Switzerland they have experimented with shrapnel bullets chained in couples with some success: the rent made in the envelope is of course bigger.

Whatever ammunition is used it should be so constructed as to explode into tiny fragments after completing a portion of its trajectory

9. A point which would have to be considered is what establishment of these mortar batteries would be necessary and would they be attached to brigades, divisions, or commands? In the event of troops without mortars being reconnoitred by an airship the only means of attacking her once she has got within the safety zone CC' is for a battery of Field Artillery to limber up and trot away 3,000 yards or so and open fire from a place where the angle of quadrant elevation to the airship is less than 65°. By which time the airship will have obtained the required information and will have moved away.

Does this mean that artillery unaccompanied by mortars will have to be dispersed, thus adding to the present difficulties of com-

munication and centralisation?

Again if the artillery did successfully engage the airship from a distance, it would be exceedingly uncomfortable for the friendly troops underneath the airship whose position the latter was reconnoitring.

10. Airships can never be cheap\* because of the necessity of

using the very best material throughout.

The Army and Navy estimates of all countries are as large as is compatible with economy. Hence no nation will ever possess a "fleet" of airships unless she were to decide to cut down expenditure in another branch of the Defence revenues, such as battleships or artillery. Such a course would be an exceedingly dangerous one seeing that airships can have no offensive or defensive power—reconnaissance being their in all and be all. We must not, therefore, expect to find airships engaged in every little skirmish in which we partake or get to rely upon them in any way, for they are still in their infancy and will have frequent breakdowns. But we must train our soldiers, and more especially our gunners to be prepared to compete against or co-operate with airships when they do appear and to be at all times ready to modify our formations, tactics, etc., as may be rendered necessary by the presence of the aerial monster.

11. In conclusion, we see that an airship is going to be a very large factor in future civilised military operations. Its rôle is reconnaissance and nothing else except an active defensive against hostile airships.

It is futile for artillery to attempt to chase airships, and our gunners must wait patiently until the airship gets within range when they must use all their ingenuity and smartness if they are

to bring her down before she gets out of their zone of fire.

A country that possesses airships fighting against one that does not cannot fail to be victorious. Its generals unhampered by the fog of war will be enabled to concentrate superior force at the enemy's weak points; these points having been discovered by the



<sup>\*</sup> Zeppelin airship cost £25,000; "La Patri " and flexible types about £10,000.

ubiquitous airships and the information promptly conveyed to the authorities.

I am indebted to the following officers for ideas and suggestions which have appeared in the following Journals:-

Major H. Bannerman Phillips

and

U. S. Magazine.

Capt. C de B. Boone
Capt. C. J. B. Hay, U. S. Journal of India.
Col. J. B. Capper, C.B., R.E.—R. Artillery Journal. And translated précis of various foreign military papers.

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the operations, each group worked more or less independently. This inability was in very strong contrast to the other side, where the movements of the different groups seemed to fit into each other with almost mechanical accuracy." However, "the older Generals may be replaced, and the staff may be weeded out." The artillery will no doubt "learn their weapon by practice." Finally, "the army taken as a whole is distinctly good, well armed, equipped and disciplined." Ignorance and over-confidence in high places led to its fall, but experientia docet.

#### VII.

In considering the lessons to be learnt from the war in Manchuria, the Japanese virtues to be imitated need as much study as the Russian vices to be avoided. The latter I have before discussed, the former appear from the British reports to be as follows:—

- 1. Patriotism.—The Japanese must be invincible "so long as they remain animated with their present flaming patriotism" (Sir Ian Hamilton); from their devotion to their country springs the fact "unique among all the armies of the world, that the personal element is quite unknown" (Captain Hart-Synnot); "Perseverance and unselfishness" are the Japanese qualities quoted by Kuropatkin to his own army, "they never relax their efforts by day or night." Russian Commander-in-Chief and British attachés alike recognise that "all have but one aim and object in view, and that is that Japan may win." Therefore they never give in, but they bear in mind Grant's maxim that "when their own condition seems least hopeful that of the enemy is perhaps no better and often worse" (Colonel Haldane).
- 2. Method, preparation, thoroughness.—These were evident from the very first. "The organisation for landing was most perfect" (Commander Wemyss); "the arrangements for the men's comfort during the Manchurian winter were most admirable" (Captain Robertson). The clothing, feeding, transport, bivouacs—every detail of efficiency are subjects of constant praise by our attachés. Everything, from strategic combinations to the sterilisation of water, was thought out beforehand and worked machine-like. With the Russians it was far otherwise; that "the Russians could starve and yet fight I saw for myself at Wu-fang-kou (Telissu) where the majority were without food for two days" (Major Home). Red tape caused this there, and at Liaoyang, and often elsewhere. For instance, "on the 17th June the men were desperately hungry and some wagon-loads of rye bread arrived by rail, sealed up for the north. The intendance declined to break the seals" (Colonel Waters). The Japanese, on the contrary, recognised that "an army marches on its belly," and fed their men well. They knew, too, that health is as necessary as courage. "The health of this army is perfectly wonderful" (General Burnett), owing to the care and forethought of the Japanese Government, backed by the "flaming patriotism" of the men, whose self-restraint avoided whatever could diminish their

### THE TAKING OF QUEBEC.

#### PART I.

### By Captain F. C. Tanner, 1st Lancashire Fusiliers.

The circumstance surrounding the taking of Quebec are so striking that the broad lines of the campaign and its lessons have been obscured by the details of a single battle.

Further, the setting of this single battle is so dramatic, and the personalities of the leaders so full of interest, that it has furnished

more food for Romance than for History.

Thus we have such admirable works of fiction as "The Virginians" and "The Scats of the Mighty," while historical inaccuracies has been so perpetuated that until some fifteen years ago, the very site of Wolfe's fall was a subject for argument. On the other hand, though, as indicated above, the taking of Quebec formed only an incident in the war, its importance was very great.

It proved the blow at the heart of the French power in America, which rendered the development of the United States possible, and decided that the Continent should remain in the hands of the Anglo-Saxon race. It was long since Canada had known peace. Colonised by the French at the beginning of the seventeenth century, her Eastern boundaries had constantly been harassed by the incursions of English settlers.

The English, hitherto confined to a narrow strip along the coast, were now beginning to push beyond the Alleghany Mountains.

To check this expansion the French had constructed a chain

of forts from the St. Lawrence to the Mississippi.

Thus the right to colonise, which formed the key-note of the Seven Years' War, was the cause of contention in North America as elsewhere in the world-wide theatre of operations.

The actual collision was hastened by the "Indian War," which left the French weakened by their efforts to put down the rebel native tribes. But war could not long have been averted, for the French, after a century and a half of colonisation, numbered only six or seven thousand, while the British colonists were over a million. The French moreover received but little encouragement from home, and considerable jealousy existed between the officials sent from France and those born in the Colony.

The war in Canada falls naturally into three periods:-

First-Colonial hostilities.

Second — Formal declaration of war and regular fighting. Third — Co-operation between Regulars and Colonials.

Without going into the question of who fired the first shot, it may be said that the first period began with an attempt by Washington,

afterwards the American hero of the War of Independence, on a half built fort on the Ohio in 1754.

Washington was defeated and forced to surrender. The French completed the fort and named it "Fort Duquesne." With the exception of the above reverse, the British Colonies were generally successful in the skirmishes which marked this period of the war. No great results were however achieved, chiefly owing to lack of transport, which rendered sustained operations impossible. Regular troops were now poured into the country by both sides, as the importance of the conflict became realised.

From England the 35th and 42nd were despatched, now the

Royal Sussex Regiment and the Black Watch respectively.

A new regiment was raised in America, designated the 60th,

now the King's Royal Rifles.

The second period (1756-1758) was opened by the formal declaration of war. Montcalm was sent to command the French armies, a leader little, if at all, inferior to Wolfe in military genius.

This period is marked by the unsympathetic treatment of the Colonials by the English Cabinet, and the steady refusal of the regular commanders to accept the advice, or benefit by the local knowledge of the settlers.

This professional jealousy produced its natural result and we

were everywhere worsted.

In 1757 Pitt came into power and his advent marked the beginning of an era of preparation which was eventually to change the whole aspect of affairs. Two Highland Regiments were immediately raised, under Fraser and Montgomery, and subsequently ten fresh corps came into being. Seven more regiments were hastily despatched to the seat of war.

Pitt's comprehensive preparations began to bear fruit in the year 1758, which brings us to the third period of the war. During this period jealousies were sunk, and Regulars and Colonials readily co-operated, under a sympathetic ministry, for the good of the Empire.

Fort Duquesne was captured and renamed Fort Pitt. Washington as if in compensation for his former defeat lead the advanced

guard of the force that captured the fortress-

One serious reverse was however sustained during this period, at Triconderoga, where the British losses were enormous. The object of Pitt's strategy was the subjection of three fortresses.

Amherst was sent against Triconderoga, Prideaux against Montreal and Wolfe against Quebec.

Amherst and Prideaux, after the investment of Triconderoga and Montreal, were to hasten to aid Wolfe in the capture of the French capital.

Neither of these Generals were however able to push forward and secure a junction with Wolfe.

Interest therefore centres itself on the Army of the North, which, inferior in numbers to the garrison opposing it, was entrusted with the task of taking an apparently impregnable fortress.

out of every three soldiers carried either an entrenching or a cutting tool "(Colonel Agar). "Were they not provided with entrenching tools they would be placed at a grave disadvantage,......the occasions must be rare when battalion tools on pack animals have been able to come sufficiently far to the front to be of service except at night" (Colonel Haldane). "Our army will undoubtedly have to carry entrenching tools, at least two days' emergency rations" (for long, modern battles), "and more ammunition in the future," as the Japanese do. They have 120 rounds in "normal order," 230 rounds additional when going into action, and one or two parcels of reserve ammunition (of 180 rounds each) when running to reinforce the firing line. "I can see no reason why a British soldier should be less capable than a Japanese" (Colonel Tulloch) of carrying for himself the food, ammunition and tools which cannot otherwise reach him in battle.

5. Night movements.—" This war has proved that when opposing forces are in close contact, night attacks are feasible and when carried out with determination successful" (Colonel Tulloch). italics are mine to indicate that the "successful night advances of our allies differ from manœuvres such as preceded Tel-el-kebir, the Atbara, and Magersfontein" (Colonel Haldane). No doubt, as Colonel Waters says on the Russian side, "a common tactical experience of this war has been the frequent marches and operations by night in all weather," as in the wars of Frederick the Great; but actual night attacks were successfully used by the Japanese to an extent hitherto unparalleled. Their principle is to gain close touch by day. "During daylight the enemy's position and strength is as far as possible ascertained; after dark specially selected men push close to the defensive line." Both officers and men have been thoroughly trained to observe and to note marks for maintaining direction, and they plant sticks or flags to aid in this extraordinary care in reconnaissance before and during battle is a special feature of the Japanese system, wrote Kuropatkin to this troops, and notably is this the case in night attacks. Hence their frequency, with almost unvarying success. But such are only attempted over short distances, which have "rarely, if ever, exceeded 1,500 yards" (Colonel Haldane).

The five chief causes detailed above sufficiently explain Japanese victory. Other points in their practice may be referred to circumstances, e.g., they, like the Russians, dispensed with longrange rifle fire; this was due perhaps to their poor shooting as well as to difficulties of ammunition supply. Their disregard of artillery preparation, Colonel Hume explains, by saying "the artillery has never been strong enough to silence the Russian guns, and the Japanese, recognising this, launched their infantry without waiting for the result of the artillery duel." But "their infantry officers seem to think that artillery co-operation was by no means a necessity" (Colonel Haldane), because the Russian shrapnel caused them so little loss. But Colonel Haldane points out that, at any rate, the ineffectiveness of the Russian rifle fire was due to the Japanese artillery. Till Mukden the Russians neglected head cover, and by the Japanese

it is a type we shall probably see more of in the near future—its characteristics being a mean between the above.

Hence we come to the conclusion that a flexible dirigible airship

is the most probable aerial enemy of our gunners.

4. Let us now consider what these airships will be capable of doing and under what conditions they will lay themselves open to attack by artillery.

Suggestions have been made that airships should be used for the

following purposes:—

- (i) Damaging hostile troops and material by dropping explosives from a height.
- (ii) Demolitions at a distance.
- (iii) Transmission of despatches.
- (iv) Destroying hostile aerial craft.

(v) Reconnaissance.

Taking these headings in order-

objects floating down stream beneath him knows how difficult it is to succeed. The task is even more difficult when the object is stationary and the operator is moving. Judge then the extreme unlikelihood of any one being able to throw a projectile on to, say, a howitzer emplacement 15 yards by 12 yards from an airship swaying 800 feet above!

"La Patrie" carried 30 torpedoes weighing 22 lbs. apiece, but it must be remembered that she was only an

experiment and very costly.

After taking into consideration expense, portability and rapidity in filling—all of vital military importance—the reader will realise that we cannot hope for our modern military airship to carry a greater weight of ammunition than 600 lbs. Of this amount a very large percentage must always be kept in hand to meet an unexpected attack by a hostile airship. Thus owing to lack of ammunition and the great difficulty of making effective use of it, it is improbable that an airship will be employed for this purpose except in very exceptional circumstances.

(ii) It rarely happens that any work or material which is worth destroying is left without a guard. A thorough demolition of, for instance, a bridge is impossible from a height, though bombs thrown on to it, it is true, may cause temporary inconvenience. To complete the work of destruction it would be necessary for the crew of the airship to effect a landing in face of the rifle fire of the detachment guarding the bridge whom it

would be difficult to surprise.

(iii) The transmission of despatches is, of course, a duty which an airship can capably perform. The question,

The handful of men sent over in rafts or open boats, the surprise of the outposts, and wide turning movement will all be seen to

afford a close parallel to the passage of the Douro in 1809.

At 2 a.m. on the 13th of September, the signal was given, and 1,700 men, headed by Wolfe, converged in rafts on "Wolfe's Cove." The recitation by the leader of "Gray's Elegy" during the night paddle is one of the dramatic incidents which has taken hold of the popular imagination to the exclusion of important facts.

The French challenge was replied to by an officer of Fraser's

Highlanders, and the sentry's suspicion lulled.

Twenty volunteers scaled the height in single file and over-

powered the French piquet.

The boats were emptied and despatched for more troops. It is considered probable that after the piquet was overpowered, the rest of the British used an easier way of ascent some hundred yards from

the original track.

This would appear likely to judge from the bridle path which is now shown as that taken by the 20 volunteers. It is difficult to believe that more than a few individuals could have found their way up it armed and at night. By dawn however the tableland at the back of Quebec was lined with British soldiers. Montcalm hastily collected a force of nearly double Wolfe's numbers. He made his attack in three columns, with Indian and Colonial sharpshooters concealed in the long grass to his front. Thus the principle of covering an attack by light infantry or skirmishers was first borrowed from Colonial warfare. The principle of obtaining a greater fire effect by receiving attacking columns in line, of which Wellington was afterwards so great an advocate, was well exemplified on the Heights of Abraham. The French opened fire at 130 yards. Wolfe's orders to his troops were to reserve their fire. The battle proper lasted but a few minutes. The British advanced steadily to meet the attacking French. At 40 yards they halted and delivered one deadly volley. Again advancing, they thrice more halted to fire, then charged. Wolfe at the head of the Louisberg Grenadiers was hit three times.

The last ball entered his chest as the charge was being delivered,

and he fell mortally wounded.

Carried to the rear, he lay apparently unconscious. Roused to consciousness by the cry "They fly," he asked "Who fly?" When told it was the enemy, he murmured "Now God be praised I die happy."

Thus ended the phase of the fight generally known as the "Tak-

ing of Quebec," yet Quebec was far from being secured.

The rest of the story, less dramatic, and less fortunate for British arms, has found fewer readers, but to the military student it is even more full of interest.

Yet the better known events, narrated above, furnish food for thought to-day. Lack of support from home, jealousy between Regulars and Colonials and naval supremacy, will bear the same fruit it is a type we shall probably see more of in the near future—its characteristics being a mean between the above.

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however, arises whether it is sound policy to utilise an airship for work which can be quite as effectively carried out by the other arms, in the shape of mounted orderlies or telephone companies. In cases where it has been found impossible to lay a telephone line, airships may undoubtedly be used with advantage in lieu; but it is unlikely that troops who could not produce a telephone line would find themselves accompanied by an airship.

A suggestion has been made in a daily paper that they should be used by generals commanding two combining armies preparatory to making a united movement, who would thus obtain for themselves an exact bird's-eye view of the situation. This is true enough, but in the present state of airship manufacture no general staff would allow their chief to risk himself in one at a critical state of affairs.

(iv) It goes without saying that an airship must always be prepared to defend itself against or to attack a hostile airship. Their tactics will be to ascend and endeavour to get above their enemy whence they can drop explosives—an adequate supply of which must always be kept in hand for this purpose.

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understood by the term.

It is unnecessary to dilate on the ease and thoroughness with which an airship can, in a very rapid survey, take in the whole of the enemy's dispositions and movements. The only difficulty seems to be how to communicate the information obtained to the staff. A code of flags flying from a tail might be used, but there is a very considerable danger of the enemy being able to read the code. Wireless telegraphy or telephony seem eminently adapted to the purpose, and at the present rate of progress will have been sufficiently perfected for field work to be used extensively by the time a suitable military airship will have been built.

By this means ample warning of the approach of hostile patrols can be transmitted to the threatened sections of the outpost line.

5 Airships can also be used in co-operation with artillery—a duty which really belongs to the captive balloon—when they can observe effect of fire and discover good targets (invisible from the ground) on to which fire may be turned.

For this purpose all military maps should be squared and squares

numbered.

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artillery may save a great waste of ammunition.

6. We thus come to the question of what means should be taken to destroy or operate against these airships. It seems generally

For the present a compromise was adopted. The defences of Quebec were improved, and two strong outposts were established at Old Lorette and St. Foy, on the western edge of the plateau of Abraham, some few miles west of the battlefield of the 13th September.

On the 26th April, Levis attacked the outpost of Old Lorette

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and drove the troops back on to St. Foy.

A storm was raging during the encounter, bridges were broken

and the country became well nigh impassable.

The boisterous weather may have been the reason that no tidings reached Murray. Whatever the reason, he had to thank chance for all the information he received of the reverse at Old Lorette. A French sailor had been picked up and rescued from drowning in the St. Lawrence. He it was who gave the information of the intended attack on the west of Quebec. Murray was at last forced to a decision, and, fired by Wolfe's example, he took the offensive, marching at dawn with 3,000 men against as enemy double his strength.

In guns however the superiority lay with Murray. Two howitzers and twenty-four field pieces were dragged by hand to the battle-

field, the mud preventing the use of horses.

On his arrival the French were debouching from a large wood on to the marshes at the foot of the Quebec plateau. The British advanced against them as they were getting into position.

In our front line were eight battalions, in the centre the guns

and 500 men, in the rear line the remaining two battalions.

At first all went well. The French left was pushed back, and closely followed by the British, retired to a windmill at the edge of the wood. Here a fierce fight ensued, the pursuers were at length driven back by the fire from the wood and in withdrawing masked the fire of their comrades in the centre.

On the French right the wood bent forward towards Murray's line. Into this the French were driven, but our troops too eager in pursuit, came under a heavy flanking fire from its southern extremity.

· At this critical moment the gun ammunition failed and

Murray's whole line fell back on Quebec.

Thus on the very site of Wolfe's victory, Murray was defeated, seven months later, with a loss of 1,000 men.

Levis wisely refrained from pursuit beyond the outer gates of the town, and entrenched himself on the heights he had won.

Once more the position of Quebec was critical. The garrison, reduced by fighting and disease, was now in a serious plight. The condition of the besiegers however was little better, and both sides worn out by their efforts awaited succour from home.

The anxiety was intense, for victory must declare for the side which first received reinforcements. On the 9th May, a British boat arrived with news of the approaching fleet, and a few days later sixteen sail of the line were seen coming up the St. Lawrence.

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The very fact of having flank observing parties prohibits rapid ranging and a rapid rate of fire cannot be sustained as the fuze and

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angles of elevation above  $50^{\circ}$ .

It seems improbable that a practical field gun or howitzer will ever be invented which can be used at all angles of elevation.

It will, therefore, be necessary to use the field guns against airships as they approach and to use these mortars (I call them that for want of a better name) against them when the airships are vertically above or nearly so. In 1906 the German firm of Messrs. Ehrhardt brought out an experimental mortar mounted on a motor and capable of throwing a shell 1,800 yards. This, however, does not seem powerful enough and in all probability the motor mounting will have to be sacrificed in order to obtain a more powerful weapon.

In all probability this new field mortar when brought out will not have a maximum range less than 6,000 yards. These mortars will then be able to keep an airship at a height of over 18,000 feet. Even armed with prism binoculars an operator at this height would

be unable to obtain very accurate or detailed information.

8. What sort of ammunition should these mortar batteries carry? The most effective shell to use seems to be one with a very delicate percussion fuze which will burst in the gas after penetrating the envelope—the difficulty being to devise a sensitive enough fuze

which will be at the same time suitable for transport.

The general consensus of opinion seems, however, to be in favour of using shrapnel and plastering the gas bag with a hail of bullets. The top of the gas bag should be riddled so as to allow the gas to escape. The airship will not be more than temporarily disabled and the crew are unlikely to be killed by their fall as would be the case with a successful shell shot, the descent being very much less rapid. In the event of a miss or whilst trying to find the range it would be most unpleasant for the mortar detachments to have their own shell and shrapnel bullets falling vertically upon them!

In Switzerland they have experimented with shrapuel bullets chained in couples with some success: the rent made in the envelope is of course bigger.

Whatever ammunition is used it should be so constructed as to explode into tiny fragments after completing a portion of its

trajectory

9. A point which would have to be considered is what establishment of these mortar batteries would be necessary and would they be attached to brigades, divisions, or commands? In the event of troops without mortars being reconnoited by an airship the only means of attacking her once she has got within the safety zone CC' is for a battery of Field Artillery to limber up and trot away 3,000 yards or so and open fire from a place where the angle of quadrant elevation to the airship is less than 65°. By which time the airship will have obtained the required information and will have moved away.

Does this mean that artillery unaccompanied by mortars will have to be dispersed, thus adding to the present difficulties of com-

munication and centralisation?

Again if the artillery did successfully engage the airship from a distance, it would be exceedingly uncomfortable for the friendly troops underneath the airship whose position the latter was reconnoiting.

10. Airships can never be cheap\* because of the necessity of

using the very best material throughout.

The Army and Navy estimates of all countries are as large as is compatible with economy. Hence no nation will ever possess a "fleet" of airships unless she were to decide to cut down expenditure in another branch of the Defence revenues, such as battleships or artillery. Such a course would be an exceedingly dangerous one seeing that airships can have no offensive or defensive power—reconnaissance being their in all and be all. We must not, therefore, expect to find airships engaged in every little skirmish in which we partake or get to rely upon them in any way, for they are still in their infancy and will have frequent breakdowns. But we must train our soldiers, and more especially our gunners to be prepared to compete against or co-operate with airships when they do appear and to be at all times ready to modify our formations, tactics, etc., as may be rendered necessary by the presence of the aerial monster.

11. In conclusion, we see that an airship is going to be a very large factor in future civilised military operations. Its rôle is reconnaissance and nothing else except an active defensive against hostile airships.

It is futile for artillery to attempt to chase airships, and our gunners must wait patiently until the airship gets within range when they must use all their ingenuity and smartness if they are

to bring her down before she gets out of their zone of fire.

A country that possesses airships fighting against one that does not cannot fail to be victorious. Its generals unhampered by the fog of war will be enabled to concentrate superior force at the enemy's weak points; these points having been discovered by the

<sup>\*</sup> Zeppelin airship cost £25,000; "La Patri " and flexible types about £10,000.

ubiquitous airships and the information promptly conveyed to the authorities.

I am indebted to the following officers for ideas and suggestions which have appeared in the following Journals:-

Major H. Bannerman Phillips

U. S. Magazine. and

Capt. C de B. Boone

Capt. C. J. B. Hay, U. S. Journal of India. Col. J. B. Capper, C.B., R.E.—R. Artillery Journal. And translated précis of various foreign military papers. Smith, Major Barré, Colonel Williamson, Colonel Napier (who I

fancy was in India at the time' and others.

2. With regard to the many "Wolfe portraits" Doughty in a most interesting chapter proves conclusively that fees indeed are genuine. He says that the last and perhaps only genuine picture was the "Highmore portrait" painted in 1749, in Wolfe's youth and given to his tutor.

There are also two sketches of proved authenticity, the last done

by Hervey Smith on the battlefield.

After Wolfe's death made him famous it appears likely that his doctor, who bore a singular resemblance to him, frequently sat for "Wolfe portraits."

3. As to the taking of Quebec, we have seen that the city was far from secure for six months after Wolfe's death, and it was only the timely arrival of the navy which enabled the British to say in May 1760 that Quebec was taken.

4. The error as to the site of Wolfe's fall is curious.

Doughty says that "the ground now called the Plains of Abraham formed no part of the famous battlefield of 13th September 1759." No part of this ground was ever owned by Abraham Martin after whom the plains were named. He attributes the blunder to an article which appeared in 1834, and goes into a careful explanation of the buildings which have obscured the actual spot.

In the "King's Map" in the British Museum (14 × 5 ft.) the actual place of Wolfe's fall is clearly marked. He was carried back out of the firing line to where the monument now stands bearing

the inscription "Here died Wolfe victorious."

## THE TAKING OF QUEBEC.

#### PART I.

# By Captain F. C. Tanner, 1st Lancashire Fusiliers.

The circumstance surrounding the taking of Quebec are so striking that the broad lines of the campaign and its lessons have been obscured by the details of a single battle.

Further, the setting of this single battle is so dramatic, and the personalities of the leaders so full of interest, that it has furnished

more food for Romance than for History.

Thus we have such admirable works of fiction as "The Virginians" and "The Scats of the Mighty," while historical inaccuracies has been so perpetuated that until some fifteen years ago, the very site of Wolfe's fall was a subject for argument. On the other hand, though, as indicated above, the taking of Quebec formed only an incident in the war, its importance was very great.

It proved the blow at the heart of the French power in America, which rendered the development of the United States possible, and decided that the Continent should remain in the hands of the Anglo-Saxon race. It was long since Canada had known peace. Colonised by the French at the beginning of the seventeenth century, her Eastern boundaries had constantly been harassed by the incursions of English settlers.

The English, hitherto confined to a narrow strip along the coast,

were now beginning to push beyond the Alleghany Mountains.

To check this expansion the French had constructed a chain

of forts from the St. Lawrence to the Mississippi.

Thus the right to colonise, which formed the key-note of the Seven Years' War, was the cause of contention in North America as

elsewhere in the world-wide theatre of operations.

The actual collision was hastened by the "Indian War," which left the French weakened by their efforts to put down the rebel native tribes. But war could not long have been averted, for the French, after a century and a half of colonisation, numbered only six or seven thousand, while the British colonists were over a million. The French moreover received but little encouragement from home, and considerable jealousy existed between the officials sent from France and those born in the Colony.

The war in Canada falls naturally into three periods:-

First—Colonial hostilities.

Second — Formal declaration of war and regular fighting. Third — Co-operation between Regulars and Colonials.

Without going into the question of who fired the first shot, it may be said that the first period began with an attempt by Washington,

afterwards the American hero of the War of Independence, on a half built fort on the Ohio in 1754.

Washington was defeated and forced to surrender. The French completed the fort and named it "Fort Duquesne." With the exception of the above reverse, the British Colonies were generally successful in the skirmishes which marked this period of the war. No great results were however achieved, chiefly owing to lack of transport, which rendered sustained operations impossible. Regular troops were now poured into the country by both sides, as the importance of the conflict became realised.

From England the 35th and 42nd were despatched, now the

Royal Sussex Regiment and the Black Watch respectively.

A new regiment was raised in America, designated the 60th.

now the King's Royal Rifles.

The second period (1756-1758) was opened by the formal declaration of war. Montcalm was sent to command the French armies, a leader little, if at all, inferior to Wolfe in military genius.

This period is marked by the unsympathetic treatment of the Colonials by the English Cabinet, and the steady refusal of the regular commanders to accept the advice, or benefit by the local knowledge of the settlers.

This professional jealousy produced its natural result and we

were everywhere worsted.

In 1757 Pitt came into power and his advent marked the beginning of an era of preparation which was eventually to change the whole aspect of affairs. Two Highland Regiments were immediately raised, under Fraser and Montgomery, and subsequently ten fresh corps came into being. Seven more regiments were hastily despatched to the seat of war.

Pitt's comprehensive preparations began to bear fruit in the year 1758, which brings us to the third period of the war. During this period jealousies were sunk, and Regulars and Colonials readily co-operated, under a sympathetic ministry, for the good of the Empire.

Fort Duquesne was captured and renamed Fort Pitt. Washington as if in compensation for his former defeat lead the advanced

guard of the force that captured the fortress.

One serious reverse was however sustained during this period. at Triconderoga, where the British losses were enormous. The object of Pitt's strategy was the subjection of three fortresses.

Amherst was sent against Triconderoga, Prideaux against

Montreal and Wolfe against Quebec.

Amherst and Prideaux, after the investment of Triconderoga and Montreal, were to hasten to aid Wolfe in the capture of the French capital.

Neither of these Generals were however able to push forward

and secure a junction with Wolfe.

Interest therefore centres itself on the Army of the North. which, inferior in numbers to the garrison opposing it, was entrusted with the task of taking an apparently impregnable fortress.

But if the task was great, the commander of the enterprise was no ordinary General. Wolfe, the son of a General, was in his thirty-second year. He had been an Adjutant at Dettingen 16 years before. In 1749 he was gazetted Major to the 20th or East Devons, and became Colonel of the Regiment in the following year. Like Sir John Moore in after years, he was far in advance of his time as a Regimental Instructor, and his orders, still preserved, bear testimony to the discipline and system of training which he enforced.

Under Amherst he had taken part in the landing at Louisberg, and it was he who urged the advance on Quebec, even

threatening to resign if his plans were not adopted.

In the most unpretending description of Wolfe, it is impossible not to draw attention to the remarkable resemblance of his temperament to that of Nelson. Always ill and in pain, his fiery temper and energy rose superior to his ailments.

Chivalrous, quick, and imaginative he had the genius for war which foresaw every eventuality, and he considered himself almost

beaten if the fullest fruits of victory were not reaped.

His very words in great emergencies seem to have foreshadowed

those of the great sea-captain.

His order previous to the battle which was to end his short career ran "Officers and men will remember what their country expects of them."

In spite of the advice of those around him, he put on a new uniform which rendered him as conspicuous on the heights of Abraham as did Nelson's on the Victory.

His last words "Thank God, I die happy"-almost repeated

at Trafalgar—complete the picture.

Montcalm, aged 47, with three years' experience of Canada was

well fitted to oppose Wolfe.

His untiring efforts were however constantly thwarted by the vanity and jealousy of Vandreuil, the Governor, a French Colonial.

A glance at the position of Quebec will show the magnitude of the task which Wolfe had set himself.

The fortress stands on an abrupt promontory on the north bank of the river St. Lawrence which here runs approximately from west to east. The St. Charles river flowing into the St. Lawrence from the north forms the eastern boundary of the city. Seven miles to the east, the Montmorenci joins the St. Lawrence from the north-Opposite Quebec, on the southern bank of the St Lawrence, is Point Levi. In midstream, but slightly to the eastward of Quebec, is situated the wooded island of Orleans. The French garrisoned the citadel of Quebec, and their field army stretched from the town to the Montmorenci. On the 21st June 1759, the British advanced squadron came up the St. Lawrence. Resorting to a ruse which has no justification according to the modern customs of war, the French flag was apparently flown, and the squadron was therefore mistaken for a friendly fleet bearing supplies for the garrison.

On the 26th June Wolfe arrived with his army of 7,000 men, and took the island of Orleans, which was weakly held, an error for which it is difficult to account. On the very night of his arrival, a fierce storm got up.

The French seized the opportunity and took the initiative. Eight fire ships were launched to drift into the British fleet. Fortunately they were fired too soon, and, detected in time, were grappled

and towed harmless to the shore.

Point Levi was now seized. Troops were landed there and on the northern bank of the St. Lawrence, east of the Montmorenci.

Wolfe thus divided his small force into three portions widely separated, his wings at Montmorenci and Point Levi being six miles

apart, with the island of Orleans as his centre.

This extraordinary disposition of force was only rendered possible by our moral supremacy, which enabled the separate portions to keep in communication and prevented the enemy from crushing our forces in detail.

Vigorous action was essential if Quebec was to be taken before

the winter came to drive our forces back.

On the 18th July some ships ran past the batteries of the citadel, destroyed the fire ships which the enemy was preparing to the west of Quebec, and cut his communication by water with Montreal.

Ten days later an enormous fire raft was launched against our squadron, but owing to the valour of our seamen proved as ineffectual as the flotilla of fire ships. On the 31st July, when his old regiment was marching to the battlefield of Mindon, Wolfe made a determined attack on the French on the Montmorenci. After a preliminary bombardment, the troops on the east of the river were transported in rafts on to the narrow strip of shore on the west. Here they assaulted the fort which crowned the grassy slope in the angle made by the St. Lawrence and Montmorenci rivers. Simultaneously a feint was made higher up the Montmorenci, and a landing threatened near Quebec.

The first redoubt was taken, but it was supported by a second in rear. The leading regiments pushed too far. Support was impossible, and harassed by a heavy cross fire, and in a blinding

storm Wolfe withdrew, with a loss of 500 men.

From the 22nd to the 29th August, Wolfe lay ill, apparently dying.

The enthusiasm of the besiegers began to ebb and the French

daily expected that the siege would be abandoned.

But Wolfe once more rallied for a supreme effort. An English Colonial had told him of a path, lying five miles to the west of Quebec where the precipitous cliff, nearly 300 feet high, might be scaled. Of this path the French General is reported to have said "We need not suppose the enemy have wings."

But like Wellington repeatedly did in the Peninsula, Wolfe deliberately chose the most difficult, and consequently least expected

point of attack.



The handful of men sent over in rafts or open boats, the surprise of the outposts, and wide turning movement will all be seen to

afford a close parallel to the passage of the Douro in 1809.

At 2 a.m. on the 13th of September, the signal was given, and 1,700 men, headed by Wolfe, converged in rafts on "Wolfe's Cove." The recitation by the leader of "Gray's Elegy" during the night paddle is one of the dramatic incidents which has taken hold of the popular imagination to the exclusion of important facts.

The French challenge was replied to by an officer of Fraser's

Highlanders, and the sentry's suspicion lulled.

Twenty volunteers scaled the height in single file and over-

powered the French piquet.

The boats were emptied and despatched for more troops. It is considered probable that after the piquet was overpowered, the rest of the British used an easier way of ascent some hundred yards from

the original track.

This would appear likely to judge from the bridle path which is now shown as that taken by the 20 volunteers. It is difficult to believe that more than a few individuals could have found their way up it armed and at night. By dawn however the tableland at the back of Quebec was lined with British soldiers. Montcalm hastily collected a force of nearly double Wolfe's numbers. He made his attack in three columns, with Indian and Colonial sharpshooters concealed in the long grass to his front. Thus the principle of covering an attack by light infantry or skirmishers was first borrowed from Colonial warfare. The principle of obtaining a greater fire effect by receiving attacking columns in line, of which Wellington was afterwards so great an advocate, was well exemplified on the Heights of Abraham. The French opened fire at 130 yards. Wolfe's orders to his troops were to reserve their fire. The battle proper lasted but a few minutes. The British advanced steadily to meet the attacking French. At 40 yards they halted and delivered one deadly volley. Again advancing, they thrice more halted to fire, then charged. Wolfe at the head of the Louisberg Grenadiers was hit three times.

The last ball entered his chest as the charge was being delivered,

and he fell mortally wounded.

Carried to the rear, he lay apparently unconscious. Roused to consciousness by the cry "They fly," he asked "Who fly?" When told it was the enemy, he murmured "Now God be praised I die happy."

Thus ended the phase of the fight generally known as the "Tak-

ing of Quebec," yet Quebec was far from being secured.

The rest of the story, less dramatic, and less fortunate for British arms, has found fewer readers, but to the military student it is even more full of interest.

Yet the better known events, narrated above, furnish food for thought to-day. Lack of support from home, jealousy between Regulars and Colonials and naval supremacy, will bear the same fruit throughout all time. "Quebec," "Wolfe," "Montcalm," what do these words, which filled the ear a century and a half ago, represent to us to-day? Are they mere names connected with the Seven Years' War, blazes in the path of past glory? or are they landmarks in the growth of our great Empire, rungs in the ladder of her future progress?

### PART II.

As we have seen, Wolfe died outside Quebec, apparently in the hour of victory. Montcalm did not long survive him. Mortally wounded in the retreat on the city, he lingered only a few hours. Romance would have it that at the death of its leader all danger for the British force was at an end. Facts require that this view be considerably modified. Twice within the next few hours the fate of Quebec trembled in the balance.

The Highlanders, pushing too eagerly after the retreating French, were checked near the bridge over the St. Charles by a body of sharpshooters, concealed in a wood. Many of the pursuers had cast aside their rifles, and carried only their broadswords. Meanwhile a large French force, too late for the earlier part of the battle, was hurrying up from Beauport, Montcalm's camp on the east of the city.

Monckton, Wolfe's second in command, had been wounded, but Townshend, who succeeded him, foresaw the danger of the Highlanders, and extricated them before they were exposed to the counterattack of the Beauport forces.

According to some authorities Wolfe's last instructions were to tell Colonel Burton to send Webb's Regiment to seize the bridge and cut off the enemy.

Whether this was the case or not, the danger was from rashness rather than overcaution in pursuit.

But happily the command appears to have passed to a subordinate without the loss of time and temporary paralysis usually accompanying the death of a leader on the battlefield, as for instance at Corunna in 1809.

The French on the other hand suffered the worst effects of change of command. Senezergues, Montcalm's lieutenant, was killed. Vandreuil, the Governor, arrived during the rout. As Parkman points out, he was in time to share the glory of victory, or disclaim the responsibility of defeat. He called a council of war and finally withdrew the demoralised army into safety at Jacques Cartier, some thirty miles distant.

He left 300 men under De Ramesav in Quebec, with instructions to surrender when food failed, unless help came. He forgot however to state that abundance of supplies of all kinds were being abandoned in Montcalm's former camp at Beauport! The existence

of these supplies, which would probably have saved Quebec, was not known to the garrison until too late, when they were being looted by English and Indians. But in one action Vandreuil did show that he was not entirely bereft of sense. He despatched a courier with news of the disaster to General Levis at Montreal. Levis arrived at Jacques Cartier on the 16th, and displayed the greatest energy and skill in reorganising and infusing a new spirit into the army. messenger was sent to De Ramesay telling him that help was at hand, and bidding him hold out.

Wolfe had been dead three days, but Quebec was not yet taken. The messenger arrived on the evening of the 17th, but too De Ramesav had surrendered only a few hours before, and the English, who had lain entrenched in front of the city, were already entering it. Levis approached on the evening of the 18th, only to find the British flag flying from the citadel. Townshend now returned home, leaving Murray to command the ten Regular battalions, which were to defend Quebec throughout the long winter.

In October the fleet sailed, carrying with it the embalmed remains of Wolfe. The French, who had again retired to Jacques Cartier, were under the command of Levis. Vandreuil wasted his time in savage attacks on the dead Montcalm, and in attempts to transfer on to De Ramesay's shoulders the blame for the surrender

of the capital.

The troops of both sides had now another enemy to contend A fierce Canadian winter had set in, and the garrison was necessarily as much occupied in hauling and cutting timber as

in improving the battered defences.

Constant rumours reached them of Levis' approach. In February a mixed force of French and Indians established a post at Point Levis. Crossing the frozen river on snow shoes, the use of which the Colonials had taught them, Murray's Regulars engaged and routed the garrison of this post. But though skirmishes of this nature were of constant occurrence the French made no forward movement.

It was quite obvious, however, that sooner or later the garrison would be called upon to withstand a determined assault. Murray had a threefold choice in solving the difficult problem before him.

He might adopt—

(1) A passive interior defence of the fortress.

(2) An exterior defence, constructing a chain of fieldworks round the town.

(3) Field operations.

For the first method he considered the battered masonry of the

fortress was no longer fit.

The second appeared preferable, but the ground, frozen to a great depth, rendered digging for some time impossible. third method his little garrison was not sufficiently numerous.

Hoping perhaps that Levis would give him time to construct fieldworks when the ground had thawed, he seems to have shelved

the question.



For the present a compromise was adopted. The defences of Quebec were improved, and two strong outposts were established at Old Lorette and St. Foy, on the western edge of the plateau of Abraham, some few miles west of the battlefield of the 13th September.

On the 26th April, Levis attacked the outpost of Old Lorette

and drove the troops back on to St. Foy.

A storm was raging during the encounter, bridges were broken

and the country became well nigh impassable.

The boisterous weather may have been the reason that no tidings reached Murray. Whatever the reason, he had to thank chance for all the information he received of the reverse at Old Lorette. A French sailor had been picked up and rescued from drowning in the St. Lawrence. He it was who gave the information of the intended attack on the west of Quebec. Murray was at last forced to a decision, and, fired by Wolfe's example, he took the offensive, marching at dawn with 3,000 men against as enemy double his strength.

In guns however the superiority lay with Murray. Two howitzers and twenty-four field pieces were dragged by hand to the battle-

field, the mud preventing the use of horses.

On his arrival the French were debouching from a large wood on to the marshes at the foot of the Quebec plateau. The British advanced against them as they were getting into position.

In our front line were eight battalions, in the centre the guns

and 500 men, in the rear line the remaining two battalions.

At first all went well. The French left was pushed back, and closely followed by the British, retired to a windmill at the edge of the wood. Here a fierce fight ensued, the pursuers were at length driven back by the fire from the wood and in withdrawing masked the fire of their comrades in the centre.

On the French right the wood bent forward towards Murray's line. Into this the French were driven, but our troops too eager in pursuit, came under a heavy flanking fire from its southern extremity.

· At this critical moment the gun ammunition failed and

Murray's whole line fell back on Quebec.

Thus on the very site of Wolfe's victory, Murray was defeated, seven months later, with a loss of 1,000 men.

Levis wisely refrained from pursuit beyond the outer gates of

the town, and entrenched himself on the heights he had won.

Once more the position of Quebec was critical. The garrison, reduced by fighting and disease, was now in a serious plight. The condition of the besiegers however was little better, and both sides worn out by their efforts awaited succour from home.

The anxiety was intense, for victory must declare for the side which first received reinforcements. On the 9th May, a British boat arrived with news of the approaching fleet, and a few days later sixteen sail of the line were seen coming up the St. Lawrence.

The French vessels were attacked, and the beseigers withdrew pursued by Murray. Thus the drama closed, as it had begun, with the efforts of the navy.

The capital of New France passed finally into the hands of the

British.

Nearly 150 years after the event the history of the fighting round Quebec found a worthy chronicler,\* in an American who had lived six years in the city.

Several points of great antiquarian interest were raised by him, a few of which may be condensed into the following questions:—

1. Does West's famous picture of Wolfe's death represent at all faithfully the scene of the 13th September !

2. Are any of the portraits of Wolfe genuine?

3. Did Wolfe in reality take Quebec?

4. Is the spot, shown for generations as the scene of Wolfe's fall, the correct one?

Startling as it may appear, all these questions may to a greater

or less extent be answered in the negative.

1. Of the dramatic group in "The death of Wolfe" Doughty says:—"West's picture is however absolutely valueless as a historical representation. It is a well-known fact that most of those represented in it were not with Wolfe at his death, some of them not having been at Quebec at all on the day of the battle, while the Indian figure, standing by, is certainly a piece of pure imagination on the part of the artist.

"West has more than imagination to answer for however. He stands charged with misrepresentation of historical facts for a money

consideration."

A daughter of General Hale who commanded a regiment under Wolfe says in a letter to the Literary Gazette, dated 11th December 1847:—"General Hale's portrait is not inserted in that fine print of Wolfe's death. Why? Because he would not give the printer the sum of £100 which he demanded, etc. There are two other well-known prints. One in the palace of the Archbishop at Quebec contains a group of three, in addition to Wolfe and the runner, the other in a private collection at Quebec includes Wolfe, two others and the runner." That there were many present is unlikely. Knox, who was told by Lieutenant, Brown says there were only Lieutenant Brown (Louisberg Grenadiers and XXII Regiment), Mr. Henderson, a Volunteer in the Louisberg Grenadiers, and a "Private Man" carrying Wolfe to the rear, and that these and an Artillery Officer were all that were present at Wolfe's death.

It is probable that Ligonier, mentioned by some authorities as present, was Wolfe's servant ("the Private Man") whom he calls

"Francois" in his will.

West's picture, it will be remembered, consists of a large group among whom are General Moncton, Dr. Adair, Captain Hervey

<sup>\*</sup> Doughty.

Smith, Major Barré, Colonel Williamson, Colonel Napier (who I

fancy was in India at the time' and others.

2. With regard to the many "Wolfe portraits" Doughty in a most interesting chapter proves conclusively that fees indeed are genuine. He says that the last and perhaps only genuine picture was the "Highmore portrait" painted in 1749, in Wolfe's youth and given to his tutor.

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by Hervey Smith on the battlefield.

After Wolfe's death made him famous it appears likely that his doctor, who bore a singular resemblance to him, frequently sat for

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3. As to the taking of Quebec, we have seen that the city was far from secure for six months after Wolfe's death, and it was only the timely arrival of the navy which enabled the British to say in May 1760 that Quebec was taken.

4. The error as to the site of Wolfe's fall is curious.

Doughty says that "the ground now called the Plains of Abraham formed no part of the famous battlefield of 13th September 1759." No part of this ground was ever owned by Abraham Martin after whom the plains were named. He attributes the blunder to an article which appeared in 1834, and goes into a careful explanation of the buildings which have obscured the actual spot.

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the inscription "Here died Wolfe victorious."

Mishchenko wounded). General Linevitch was placed in command of the entire left wing. The Russian Commander having now satisfied his mind with reference to his left flank, resumed his idea of an offensive movement, and ordered General Bilderling (3rd Army) to make a demonstration towards the SCHA-HO bridge. This was ordered for the 26th but was postponed till the 27th, on account of the snow-storm.

25th—The two columns of the 5th Japanese Army reached the DALIN and SICHUANDIN passes. The 1st Army advanced towards the SCHA-HO.

The 1st Siberian Army Corps having marched 25 miles, arrived

at SANLINTSI and remained there one day.

26th—The 5th Army attained ULUNKAU and SANTUNYUI. The 1st Army was in touch with the enemy on the SCHA-HO, the guard division opening artillery fire.

27th—The 5th Army was held up at DITA and UBONIULU.

The 1st became engaged with the enemy.

Westward, the Japanese were ominously silent.

On this day however, Grekof's cavalry discovered the advance troops of the 3rd Japanese Army in some strength at KALIAAMA in the LIAO-HO valley. It was also rumoured that the enemy was at SINMINTUN. General Grekof was ordered to reconnoitre further west and towards the rear of the advancing enemy.

The 3rd Japanese Army was now executing its difficult and precarious wheel in four columns, and reached KALIAAMA-WANDIKAN-SALUGUANPU MAMYKAI. The 2nd Cavalry Brigade on its extreme

west beyond the LIAO-HO reached TAKU.

About 10 P.M. the delayed demonstration of the Russian 3rd Army took place. The original idea of this was to relieve the left wing. The head of the railway bridge over the SCHA-HO was stormed and the Japanese expelled from the neighbouring woods. They replied with artillery, followed by a counter-attack, which failed twice but at the third attempt succeeded in retaking the positions.

The 1st Siberian Corps reached MAULUNPU (20 miles).

28th—At 11 A.M. the Chief of Staff of the 2nd Army received

this report from General Grekof:-

On the line TALANTOTZ-SIDYATURL-NANDYATURL\* were encountered the advance units of the Japanese; their Infantry is behind this line. Behind the advance units of the Japanese are approaching columns from south to north; so far I have counted two regiments. From Kaliaama the Infantry debouched to the North; a division of infantry with artillery is approaching Kaliaama; immediately behind it another column is moving from the South. Both columns are approaching the left bank of the Liao-ho. The strength of the Japanese is being observed by our patrols. The strength of the enemy on the Talantotz line is visible to us; I engaged the enemy's columns with artillery fire. The enemy is continuing northward. The



<sup>\*</sup> I cannot find Nandyaturl on any map.

Smith, Major Barré, Colonel Williamson, Colonel Napier (who I

fancy was in India at the time' and others.

2. With regard to the many "Wolfe portraits" Doughty in a most interesting chapter proves conclusively that fees inde ed are genuine. He says that the last and perhaps only genuine picture was the "Highmore portrait" painted in 1749, in Wolfe's youth and given to his tutor.

There are also two sketches of proved authenticity, the last done

by Hervey Smith on the battlefield.

After Wolfe's death made him famous it appears likely that his doctor, who bore a singular resemblance to him, frequently sat for "Wolfe portraits."

3. As to the taking of Quebec, we have seen that the city was far from secure for six months after Wolfe's death and it was

#### THE ROLE OF TELEPHONES IN THE FIELD.

By LIEUT. G. T. E. KEITH, 1ST BATTN., THE KING'S OWN REGIMENT.

A recent tactician once said that "the days of the 'flag-wagger'

have passed and that of the Telephonist come ".

From the enormous use of the telephone in Manchuria, one might judge this to be the case, but it must be borne in mind that the Japanese had practically no visual signalling arrangements, and that the telephone was really resorted to as a rapid means of obtaining a system of communication, for which men could be trained in less

time than for visual signalling.

As an adjunct to signalling telephony is admirable. Its operators do not form conspicuous targets, positions are not revealed to the enemy, as is possible with the helio, flag or lamp, and there is less liability of messages being read by hostile troops. Commanding Officers can converse, messages can be sent to several stations simultaneously as quickly as a man can write, men are economized and communication can be established at times and in places where visual signalling is impossible.

It is suggested that:—

Each Battery of Artillery should be provided with three telephones and three miles of light cable worked by one N.-C.O. and six men, to furnish communication between the observation post, the Battery and the O. C., Artillery Brigade.

Each battalion of Infantry should have a telephone detachment of one N.-C.O. and eight men provided with three instruments and four miles of light cable to connect up the two half battalions to their Officer Command-

ing, and furnish a line towards the Brigade Commander.

In countries where there are telegraph wires a few scouts, provided with specially light instruments, can often do useful work by tapping,

provided they have been properly trained.

Surplus men (trained by units) and instruments (kept in charge of units) should be formed into a Brigade section of one Officer, 16 rank and file with a telephone exchange, eight instruments and five to eight miles of a slightly heavier cable.

A divisional section, working in conjunction with the Field

Telegraph Company, follows and replaces the existing light cables by heavy cable or aerial wire.

Two men per squadron, trained to do repairs, with cavalry instruments, can be usefully employed repairing any damage or tapping enemy's wires.

Every use should be made of existing wires, and it is, therefore, essential that reconnaissance reports give full details of Telegraph wires or wire fences in the vicinity of operations.

It has been said that the Russians made a great mistake at Nanshan by using aerial wire, as it was

repeatedly broken by shells.

The mistake is erecting field aerial wires taut. A slack, bare wire stands a much better chance as it gives to a spent bullet, is not so liable to concussion breakages and offers a smaller surface than cable, which is generally liable to be broken by a wheeled traffic.

Stout bamboo poles, with leather or rubber insulators such as are frequently used in the field in India, are very light, strong and

quickly erected.

During the manœuvres in Burma, 1906, a line across a position two miles in length, withstood the field firing of a Brigade for eight hours, whereas a Telegraph cable laid immediately below was cut in many places.

One pole, I saw afterwards, was found to have 28 bullet holes in it, but was strong enough to bear the weight of a man who climbed it, and in addition the wire (12 B.W.G. Galvanised) showed signs of

having been touched by bullets.

As a rule, in wiring defensive positions, time will permit a reliable installation. Cables can be buried and every use made of rising ground for cover. Aerial wires in front of artillery positions can be avoided, and if the Reserves are in communication with their firing lines, they can be joined up to one another, so that if the main firing line wire is cut an alternative route from flank to flank, vid the rear is obtainable.

In the primary stages of the attack, the telephone is of the greatest use. From the position of deployment, the various attacks, should be kept, in exchange communication by means of light cable, unrolled from carts, mules or hand drums, which can be laid down or taken up as fast as the troops can move.

This cable (a light coloured one for choice, which will be easily seen) should be replaced, as soon as possible, by heavier cable or

aerial wire.

A moving station should be kept in readiness to keep the Brigade or Divisional Commander in touch with the exchange, either

by "teeing in" on an existing line or laying an extra line.

Touch should be kept with the O.C., Artillery, by a line from one of the batteries to the exchange, who (if they know where the O.C., Artillery, is going to be), will save time by meeting this line with a wire from the exchange.

By a pre-arranged signal the advanced infantry can stop the firing of the guns, when they reach the danger zone of their own guns in a few seconds, whereas in favourable country, with visual signalling.

some minutes must clapse.

This special telephonic signal should only be issued at the last minute, before moving off and changed daily.

For field work the Buzzer call is essential, and the lightest instrument consistent with the work it is intended for, is the best. By means of the Buzzer, messages can be got through on wire fences, bare wire lying on the ground and often on a broken circuit when speech is impossible.

For regimental work the "Medhurst" instrument, weighing about  $4\frac{1}{2}$  lbs., gives excellent results but a somewhat stouter instrument has been made with 3 dry cells and a special "loud hearing

key" weighing only 3 lbs. and measuring  $6'' \times 4'' \times 7$ ".

Magneto currents require good insulation, which advanced telephone cables rarely allow of. As mobility is not so essential for the Divisional Sections, they may be provided with instruments comprising both calls, weighing 8—12 lbs. The Brigade Sections can be provided with "separate magneto generator and bell sets" weighing 5 lbs. each, which can be forwarded to their advanced stations, should the lines to them permit. The advanced operators at the start are over-burdened, but every yard they have gone their weight of wire is less, they work in pairs so the separate magneto set, when it arrives, can be carried by the man who is not carrying the telephone. The use of 'telanpads' and constant practice, however, go far towards training men to receive Buzzer messages under trying conditions.

A magneto exchange with at least 5 lines that can be quickly switched into an "omnibus circuit" for the simultaneous transmission of messages to two or more stations, should be carried by the Brigade

Section.

One containing 5 drops and jacks, connecting cords, dry cells, night bell, etc., can be carried over a man's shoulder in a box  $6^{\circ} \times 6^{\circ} \times 14^{\circ}$  weighing only 8 lbs.

It should be fitted with a Buzzer Receiver for use with advanced stations until they receive their magnetos, and in case magneto call

fails.

One often hears said "any one can speak through a telephone"

but it is not everyone who can hear or rectify the fault if the telephone goes wrong.

During the partial mobilisation of the Portsmouth defences in 1907, it was found that inexperienced telephone operators had great difficulty in keeping up communication in such positions as Fortress Commanders Fighting Posts (where there are several operators, each of whom, in addition to attending to his telephone or telephones has, at the same time, to receive verbal orders), owing to the noise from other instruments.

With well trained men, it is possible to have two men transmitting over the same wire at one time. Men working together continuously get to know the sound of each others voices and can tell if the wire is being tapped or has been cut, in an instant.

bold enough to risk a much weaker centre at the outset, then "victory would have been his a whole week sooner and with much more decisive results." He thinks that perhaps Marshal Oyama was nervous about his great extent of front, and points to Moltke's opinion "too great an extent of front entails a certain risk, but conceals at the same time the germs of great success." He also remarks on the danger of the 3rd Army's wheeling movement in face of the enemy, and wonders why it was not executed like that of the 5th Army, so as to approach bearing on the enemy's flank.

Considering the Russian dispositions, he is struck by the fact that their right wing was en lair, inviting envelopment, and moreover, in a country more adapted to fighting than the left. He thinks that there should have been four Corps in rear of the right as an independent mobile wing, for defensive purposes or for a decisive counter-attack, and remarks that in any case General Kuropatkin might have sent eastward the General Reserve of one and a half Corps at Mukden, which was nearer, and at his own disposal; instead of robbing the 2nd Army of its own Reserve (The 1st Siberian Army Corps). He shows that even as late as March 3, victory was "within the grasp of the Russians."

"The Japanese envelopment, when approaching the Russian entrenchments west of Mukden, had become a long thin line without any reserves" with Burger's brigade of 8 Battalions on its left rear, connected by a strong cavalry division with the 3 Russian divisions

already west of Mukden.

In the Russko-Yaponskaya Voyna of the Russian General Staff it is stated that *even* on the morning of the 15th (i.e., 28th February) ignoring the above mentioned report of General Grekof, the Commander-in-Chief inclined more to the idea of bringing about an independent defeat of the enemy on our left flank.

Finally, towards the morning of the 16th February (1st March), in view of the series of reports from our cavalry, and the fierce attack on our skirmishing corps, it was evident to all the Army that along the Liao-ho to the North was stretched the whole Army of Nogi—

why then hesitate in making a definite decision?

\* I do not say that it was necessary, immediately on the 16th, to strike at the enveloping Army of the enemy; no! this was not possible, in view of all the mistakes in disposition and of our unsuitable position; but it was necessary even then to put a stop to all hesitation, and for every man to strain a point, for a great and resourceful effort towards the concentration of a powerful blow against the bold risky movement of Nogi. If that had been done on the 16th February, then, on the morning of the 18th (3rd March), we would have been able to assemble from the Xth Corps—32 Battalions, 72nd Division—16 Battalions, Ch. XVIth Corps 24 Battalions, one Division from 3rd Army 16 Battalions, a brigade of the existing reserve of the 2nd Army 8 Battalions, 1st Siberian Army Corps, 21 Bat-

<sup>\*</sup> Colonel Debrovolsky of the Russian General Staff, from whose account I translate this direct.



talions, Total 120 Battalions; to which, on the morning of the 19th (4th), it would have been possible, if successful, to add the other units of the 2nd Army, amounting to 56 Battalions.

These 120 Battalions were actually assembled (with the exception of the brigade of General Burger detached from the line); but they were assembled on the 20th (March 5th) and not on the 18th (March 3rd) and at that time two days meant much.

The difficulty in training men has been to find a book that the soldier can understand, and which did not deal in equations and

algebra before the end of the first chapter.

I have found it a mistake to teach men telephony only. By teaching "electricity in general," progressively, for example, the subject of Trembler Bells leads on to that of Motors, and that of Motors on to Dynamos; the men take more interest and thoroughly understand telephones at the end of a course of 10 lectures of one hour each.

Keen, intelligent men, preferably those who have had to give up signalling, make the best operators, and once having mastered his work, the man has another opening when he returns to civilian life. Having learnt the principles, practical working in the field, practice in sending and receiving written messages require at least another week.

Definite rules for transmission have to drawn up, as rules which apply to signalling, will not always suit telephony, where such mistakes as 14 and 40, dictated incorrectly, might cause grave errors.

It is an open question as to whether all Officers or Commanding

Officers only should be allowed to converse over field telephone lines.

Field lines, are often on an "omnibus circuit," that is to say, 'with several stations on one line' and an excited man may upset the whole system; whereas, if he has to write his message down, he thinks of what he is going to say and the message he sends is kept as a record. With semi-private lines, such as from a battery of artillery to the Observation Officer, the case is different.

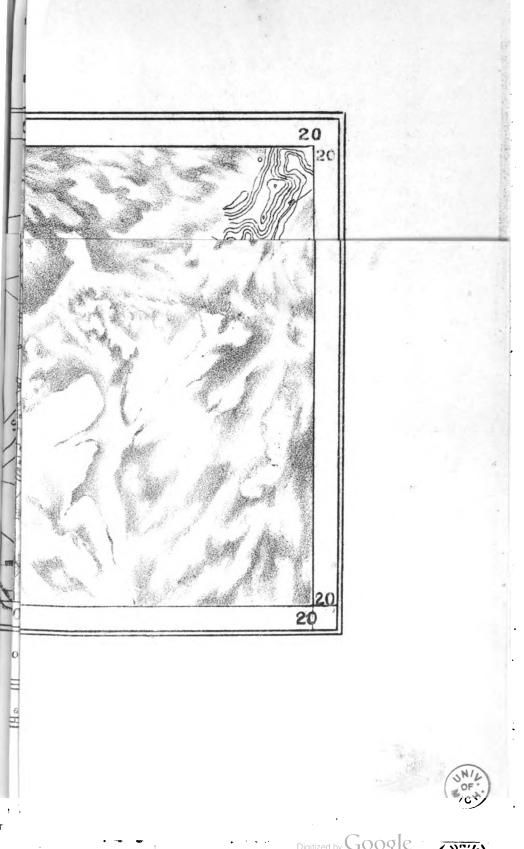
Three thousand sets of telephonic apparatus were sent out to the Russian army in Manchuria; of these 1,700 were very heavy, weighing nearly twenty pounds each set, and were used only well in rear of the army. Four hundred were of a much lighter type, weighing only 4 lbs., were used regimentally and for communication between units and the headquarters of divisions. Nine hundred were not of any special utility, but as they had been sent out, were largely used on outpost line.

I venture to doubt, if the same number of instruments had been sent out to South Africa, if half of them could have been utilized.

Truly the motto of the R. E. is "Ubique," but as the lots of the Engineer and Sapper and Miner are already heavy, and their numbers few, it does not seem advisable to burden them with telephony, when they can be more usefully employed elsewhere. Schools of instruction are to be started in India so shortly, we may expect to find every battery and regiment with their complement of trained telephonists. Wireless Telephony will be many years before it is made applicable to Field Telephony, and in the meantime we must carry on with the best means at our disposal.

The British flag-wagger is an excellent man at his job, but there are times when "visual signalling" may fail. Let the British Telephonist be prepared to rise to the occasion and earn the title the flag-wagger has attained, "the best in all armies".

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#### INCINERATION IN THE FIELD.

#### BY LIEUT. COLONEL B. S. KINNER, R.A.M.C.

The spread of disease in Armies in the Field is a matter of such serious importance to the Commanders, that any method of sanitation which removes the sources of disease must appeal to them, as affording a means of conducting subsequent campaigns with a minimum wastage of men from those causes which are classed as preventable. Among such are Enteric Fever, Dysentery, and Cholera. By destroying the evacuations of men who are suffering or have suffered from these diseases, a fruitful source of their propagation is abolished for ever; and as it is impossible to say that in a crowd of men there are no sources of infective diseases existing unknown to the carriers, it is necessary that the destruction of all evacuations should be carried out for the whole crowd. By these means the whole camp and the entourage are kept sanitary and also free from "nuisances."

If the evacuations can be burnt in camp, as they are now being burnt in Cantonments, the desired destruction of the germs of disease can be effected in the Field where, as shown by history, Armies

have been destroyed by epidemics caused by these germs.

The principle of incineration, to be bacteriologically successful, requires that the excreta of the whole population shall be removed, without soiling the ground, into a fire wherein they shall be destroyed completely.

They must, therefore, be received into an impervious vessel and conveyed into the incinerator; and the arrangements of the incinerator must be such that they will ensure complete combustion of the

excreta.

This is carried out in Cantonments by means of earthen vessels for the reception of excreta; in these, rubbish or litter is placed to soak up the liquid. The vessels after use are emptied into a furnace, which consists radically of a grating near the base of a chimney. The fire is started by the ignition of litter and sweepings arranged upon the grating, more being added, from time to time, as required. The result is a fine ash which is sterile; i.e., it is free from germs. It is useless as garden manure unless mixed with other soil, because it contains no germs.

This principle can be successfully imitated in the field as

follows :---

Light iron receptacles are necessary for the latrines, in the proportions of 4 per company or 6 per squadron. Kerosene oil or other



<sup>•</sup> A heap of this ash left in a garden will be found to be free from vegetation for weeks after it has been deposited, except at the bottom where vegetation will be seen creeping in from neighbouring ground.

tins are required for use as urinals, to be placed near the latrines by day, and about the camp or bivouac at night. These (the urinals)

are charged with litter or sweepings nearly to the top.

For the incinerator, ten light iron bars 4 feet in length are necessary. There should be two sets of bars, the second set being carried on by the foremost baggage, so as to be available as early as possible at the next camp. This permits of the first set being left at the old camp while the refuse is being burnt up.

The first duty of the sanitary party on arrival in camp will be

to lay out the pans ready for use.

The next duty will be to make mud for the building of the

incinerator. The mud should be stiff.

The mud having been prepared, it is moulded into the shape of small bricks. These are then placed in a circle with an inside diameter of 3 feet; the circle is broken at 4 equi-distant points for a space of 6 inches. The mud should then be piled up as a wall, which, when 6 inches height has been reached, must be made continuous so as to cover the spaces originally left to form the draught openings. (See diagram).

After another 2 inches in height have been added, the bars are laid across, and laid so as to project mainly on one aspect so that they

can be gripped for withdrawal.

Next, the building is continued until the wall is 3 feet high. The incinerator is then ready for use, having taken an hour or less to

put up.

Incineration is effected in exactly the same manner as in Cantonments, with the result that the Camp will be kept free from dirt and litter; all the excreta will be burnt off into sterile ash, and when the force moves away it will leave behind it ground whereon subsequent parties of men may camp without acquiring any disease germs such as, in the present day, form the legacy of those who have last occupied the site.

The system has now been practically tested by a Battery of R.H.A. while marching, and while at Practice Camp, and subsequently by Cavalry and Infantry, both British and Native, at manœuvres;

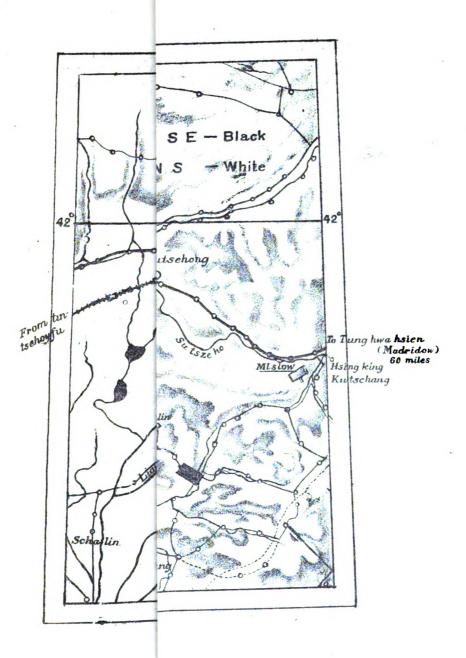
and on all occasions has acted efficiently.

As transport for the requisite materials is not authorised, makeshift arrangements had to be made for their carriage during these tests. And this item of transport is the part of the system which requires exact demonstration for purposes of organization. The total weight to be carried for an Infantry battalion is about 160 lbs., i.e., the equivalent of one mule load. This is sufficient for ordinary marches, when the battalion is not split up. And probably it would be found to be sufficient on service, when units are liable to be split up, and when it would be necessary to provide each detachment with incinerator materials. For on service it is nearly always possible to collect tins, and scraps of iron, such as the bands round bales. If these were used for the stationary bodies, the special transport and materials would be available for detachments. Although one mule

# Elevation Bar level Draught opening

30F:

load is the total weight to be carried, it would be advisable to provide two mules per battalion or regiment of Cavalry in order to expedite the transit of the incinerators on ordinary marches, and to make some provision for detached parties. This point can only be finally settled by experiment when trial has been officially approved. But in the meantime this paper has been put forward as it deals with a procedure which must appeal to the Army at large, because it indicates the means of accomplishing satisfactory sanitation in the field.



#### THE BATTLE OF MUKDEN.

#### By LIEUTENANT N. C. TAYLOR, 98TH INFANTRY.

After the retreat from SANDEPU the Russian Forces were drawn up facing South, with their centre on the Railway to Port Arthur, about 12 miles south of MUKDEN.

Eastward from the railway the country is everywhere hilly, and rapidly rises until it becomes mountainous and much intersected to the West, it is mostly flat, and at the time of the battle was extremely rough, the furrows of the fields being frozen hard: the rivers could be crossed by Artillery, except where the ice had been intentionally broken. The extent of the position taken up was about 47 miles east to west, both flanks being in advance of the centre. Several months of hard labour had previously been expended in preparing the line of defence, which consisted of two positions one behind the other, and included many fortified villages and redoubts, everywhere strengthened by abattis, wire entanglements etc. All trenches and redoubts were connected by telegraph or telephone with each other, and also with Head-quarters.

The centre was occupied by the 3rd Army, under General Bilderling; the right by the 2nd, under Kaulbars; and the left by

the 1st Army, under Linevitch.

The troops were divided into two reliefs, half occupying the trenches, etc., whilst the remainder retired to the camps in rear. The town of MUKDEN was protected on the west side by a series of redoubts which, however, do not appear to have been occupied at the beginning of the battle.

From the 1st Army were detached two Infantry Divisions and three Regiments of cavalry under General Alexieff, to protect the left

flank and cover the mountain cart roads into MUKDEN.

There were besides two detachments in the mountains further east, but, as these were never engaged, and did not rejoin till after the battle, they may be ignored.

The right flank was protected by a western detachment under Rennenkampf, consisting of one and a half cavalry divisions and an

Infantry Brigade, from the 2nd Army.

The General Reserve of one and a half Army Corps, at the disposal of the Commander-in Chief, was stationed in rear of the centre.

The 2nd Army had one and a quarter Corps in rear of its right

wing, as its own reserve.

The Japanese took up a defensive position, about 40 miles in extent, parallel to that of the Russians, and at four to five miles average distance from the latter.

Their position also was strongly entrenched, but not quite on such an elaborate scale as that of their opponents. Both flanks were refused. Their five armies were disposed as follows:—The 1st on the right, under Kuroki; the 2nd on the Left, under Oku; the 4th in the centre, under Nodzu; the 3rd, under Nogi, was drawn up in rear of the 2nd, with a view to the envelopment of the Russian right flank; and the 5th, under Kamamura, consisting of only three divisions, was moving in two columns against the Russian Eastern Detachment.

Behind the main line were nine divisions in reserve.

The two armies faced each other 310,000 strong each, the Russian had a preponderance of 300 Field Guns and the Japanese an advantage of 112 machine guns.

A blinding snow-storm occurred on the 26th of February and also on March the 9th, otherwise, during the operations, the weather was bright and clear, except where, over the rivers, a slight haze hung in the morning. The temperature rose to about 35 degrees Fahrenheit by day, and fell to about 10 degrees at night.

The hills were covered with snow, but there was little lying on

the plains.

The intention of General Kuropatkin was to assume the offen sive with his right wing, while Marshal Oyama intended to threaten, and if possible, force back the Russian extreme left with his weak 5th Army, whilst enveloping their right with his 3rd. This he accomplished.

On the night of the 18/19th February 1905, the Japanese 5th Army after an arduous march through the mountain snows, first

came in contact with the Russian Eastern Detachment.

From then until the 25th February, in that mountain locality the struggle was fierce and continuous for possession of the only two cart roads through the mountains; namely those through the Sichuanlin and Dalin Passes. By the evening of the 24th the Russians had been dislodged from their original positions at TSINDOUYUI and TSCHIN-NO-TSCHIN, after considerable slaughter on both sides. The object of the 5th Japanese Army was to reach FUSCHUN.

During this time the Japanese 1st Army became engaged with the Russian 1st Army, so that the whole of the Russian left flank was now engaged. This so impressed the Russian Commander-in-Chief (who had meanwhile received the erroneous information that the enemy's reserve was moving eastward), that by the evening of the 24th, he became convinced that his left flank was in serious jeopardy. He countermanded his orders for the advance of the 2nd Army, and gave direct orders to its reserve, to move that very night for TSCHIN-NO-TSCHIN. This reserve was composed of the 1st Siberian Army Corps, and half of the 6th E. Siberian Rifle Division (the latter proceeded by rail to Fuschun). The 72nd Infantry Division was to follow on the 25th. General Rennenkampf was ordered by telegraph, to take command of the Eastern Detachment, and all its reinforcements. (He had only just taken over the cavalry vice

Mishchenko wounded). General Linevitch was placed in command of the entire left wing. The Russian Commander having now satisfied his mind with reference to his left flank, resumed his idea of an offensive movement, and ordered General Bilderling (3rd Army) to make a demonstration towards the scha-ho bridge. This was ordered for the 26th but was postponed till the 27th, on account of the snow-storm.

25th—The two columns of the 5th Japanese Army reached the DALIN and SICHUANDIN passes. The 1st Army advanced towards the SCHA-HO.

The 1st Siberian Army Corps having marched 25 miles, arrived at SANLINTSI and remained there one day.

26th—The 5th Army attained ULUNKAU and SANTUNYUI. The 1st Army was in touch with the enemy on the SCHA-HO, the guard division opening artillery fire.

27th—The 5th Army was held up at DITA and UBONIULU.

The 1st became engaged with the enemy.

Westward, the Japanese were ominously silent.

On this day however, Grekof's cavalry discovered the advance troops of the 3rd Japanese Army in some strength at KALIAAMA in the LIAO-HO valley. It was also rumoured that the enemy was at SINMINTUN. General Grekof was ordered to reconnoite further west and towards the rear of the advancing enemy.

The 3rd Japanese Army was now executing its difficult and precarious wheel in four columns, and reached KALIAAMA-WANDIKAN-SALUGUANPU MAMYKAI. The 2nd Cavalry Brigade on its extreme west beyond the LIAO-HO reached TAKU.

About 10 P.M. the delayed demonstration of the Russian 3rd Army took place. The original idea of this was to relieve the left wing. The head of the railway bridge over the SCHA-HO was stormed and the Japanese expelled from the neighbouring woods. They replied with artillery, followed by a counter-attack, which failed twice but at the third attempt succeeded in retaking the positions.

The 1st Siberian Corps reached MAULUNPU (20 miles).

28th—At 11 A.M. the Chief of Staff of the 2nd Army received

this report from General Grekof:-

On the line TALANTOTZ-SIDYATURL-NANDYATURL \* were encountered the advance units of the Japanese; their Infantry is behind this line. Behind the advance units of the Japanese are approaching columns from south to north; so far I have counted two regiments. From Kaliaama the Infantry debouched to the North; a division of infantry with artillery is approaching Kaliaama; immediately behind it another column is moving from the South. Both columns are approaching the left bank of the Liao-ho. The strength of the Japanese is being observed by our patrols. The strength of the enemy on the Talantotz line is visible to us; I engaged the enemy's columns with artillery fire. The enemy is continuing northward. The



<sup>\*</sup> I cannot find Nandyaturl on any map.

25th Infantry Division and all that was left of the General Reserve was despatched towards SALINPU. A composite Division was formed and followed on the night 28th February—1st March. The four columns of the Japanese 3rd Army were now along the line TUYITUAN-ANTUTAITSI, the right column being in touch with the enemy. The four flank cavalry reached YANGCHIA WAPING and were in touch with the Russian Cavalry. The 2nd Japanese Army then commenced the bombardment, which the 1st and 4th were continuing. The 5th was still held up.

The 1st Siberian Corps reached YINSCHOUPUSA.

March 1st.—The 2nd Japanese Army attacked the 2nd Russian Army, with a view to enchaining it to its positions. A new reserve of this Army which had been detailed, could not be withdrawn from the firing line owing to the vigour of the Japanese attack. The 3rd Japanese Army, with a prospect now of greater opposition, became more concentrated and reached the line TICHIAKANGTZU-SIFANTAI; the Russian position at the latter place being enfiladed by the 9th Division. The 7th Division had pushed on to SADIENSA. The advance cavalry were at SINMINTUN, and the main body at TAMINTUN still in touch with Crekof's Cavalry. Frequent actions took place between the respective 1st Armies, several advanced posts being captured by the Japanese. The right column of the 5th Army was unable to advance, but the left got half way to MATSIUNDAN. The 4th Army continued its bombardment.

The Russian Commander-in-Chief, now fully realising the danger in which his extreme right stood, decided to withdraw it. The 1st and XVIIth "Army Corps," were ordered to Mukden, and

also the 1st Siberian Corps which had reached TIAAHO.

March 2nd —The western Detachment and the VIIIth Army Corps commenced the retirement ordered the previous night, but an unfortunate incident occurred. The Magazines at LANDUNSAN took fire, and their glare (although 12 miles away to the northward) was sufficient to reveal the retirement to the Japanese.

The 9th Division at once attacked SIFANTAI and followed the

western Detachment up the HUN-HO valley.

The left wing of the 2nd Army pushed in north eastwards, and reached with its left TSCHANTAN. The 4th attacked to hold the enemy. The remainder of the 3rd Army reached the line TSAODIATUNBSINIULU.

The cavalry pressed back the Cossacks to TAFASCHIN, where they met Burger's Infantry brigade. The 1st Army still persisted in the attack, the 12th Division succeeded in crossing the SCHA-HO; The 2nd Division stormed two redoubts in the KAUTULIN Pass.

The 5th Army was still held up,

The 1st Siberian Corps reached YANTAUSA.

3rd March.—The progress of the Japanese 3rd Army was temporarily stayed; it however routed a Russian counter-attack. The 9th Division reached LINDIATAI. The 2nd Army continued the wheel and with its left reached AIDIAPU. A cavalry action was

fought in the neighbourhood of TAFASCHIN, 2 battalions arriving to assist the Japanese cavalry, and the Cossacks, together with Burger's Brigade, were driven north-eastward. Elsewhere, in spite of obstinate fighting, the situation was not materially altered. A Brigade of the Guard's Division gained the north bank of the SCHA-HO.

The 1st Siberian Corps reached Mukden. It had marched 90 miles in 7 days without seeing the enemy. "That martyr of our strategical unhappiness and perpetual wavering during this war." \*

4th March.—The Japanese extreme left was instructed to advance to TIANSIATUN due north from Mukden. The remainder of the 3rd Army was to press in as far as the railway, and menace the Russian line of retreat. But it was discovered that the Russian line extended further north than had been anticipated. General Nogi was therefore ordered to reach further north. The 2nd Army was to 'left close' and a Division of the General Reserve to fill the resultant The 4th Army extended and right-wheeled its left wing.

Elsewhere along the line there was comparative quiet, the troops everywhere lying face to face at short range. The right wing of the Japanese 1st Army was ordered to advance north-eastwards, and

support the 5th Army—still held up.

The Russian Commander-in-Chief had ordered a general attack westward, but his plan was frustrated by a furious attack on the north bank of the Hun-ho, which almost succeeded in penetrating the Russian line.

The 4th Japanese Army, unable to make any headway northwards, owing to the great strength of the enemy's positions, confined itself to driving in its wheeled left flank. This was assisted by a muddle on the part of the opposing commander, who had issued an order to fall back on the railway embankment, and then counter-The order and the counter-order had both been partially manded it. carried out.

An attack was made during the night of 5—6th against he right wing of the 4th Japanese Army, but was repulsed.

The Japanese 1st Army gained some ground; the right wing

capturing the TOKEREI pass.

On the extreme East there was no change.

On the extreme West, Japanese divisions were being moved The 9th was taking the place of the 1st which was northwards. proceeding further north. The 3rd from the General Reserve was

to replace the 9th.

6th March.—The Russian Commander-in-Chief having arranged for an offensive movement west of Mukden, an attack was commenced in the morning. A fresh general reserve of three regiments had been assembled in Mukden. The Russian right commenced its attack towards TASCHITSCHAO at 11 A. M. This was a very critical moment for the Japanese. The 1st Division had left for the North and the 9th had not yet arrived to replace it. The situation, however,

<sup>\*</sup> Colonel Dobrorolsky in the Rusko-Yaponskaya Voyna of the Russian General Staff



was saved by a Battalion of the 7th Division which gallantly maintained itself until the arrival of the 9th; when the Russian attack was repulsed all along the line. Apart from this no important change took place on this day. The Russian 3rd Army commenced

to retire its heavy guns.

7th March.—The Japanese 3rd Army was slowly but surely forcing its way down from the North. Its left reached TIANDSIATUN and temporarily interrupted railway and telegraph communication north of Mukden. The cavalry reached TASINTUN. There was a gap of 2 miles between the 2nd and 3rd Armies. The general reserve arrived in rear of the 3rd. The 2nd Army continued the attack but lost the brigade on its left flank which had pressed in too far, and had been annihilated. The remainder of this army gained ground only by the aid of pick and shovel. The left wing of the 4th Army forced the enemy back to the disused railway embankment between MADIAPU and SUYATUN, and the line SUYATUN-PODOWIASA-SCHAHOPU. That part of the 1st Army which had crossed the SCHA-HO (2 brigades) repelled a fierce counter-attack. The right wing of this army got in touch with the 5th Army which had reached MATSIUDAN and NANTSCHANDAN.

That evening the Russian retreat from the south front was

ordered and commenced the same night.

8th March—The retirement of the 1st Army to the HUN-HO was carried out in good order, parallel roads having previously been prepared. The retreat of the Eastern Detachment was also executed in splendid order to YINPAN, YULINPU and SANSAITSI. The 3rd Army had a more difficult task, being somewhat disorganised by the hard fighting it had gone through but it was not much pressed by the enemy and succeeded in reaching the HUN-HO, and crossed the ice. The right wing of the 1st Army, as also the main body of the 3rd was ordered to march on SIAOGOSA-UNGUANTUN. The 3rd arrived on the 8th, and the 1st on the 9th.

The 5th Japanese Army began its advance on the same day.

The 1st Army received this order on the night 7,8th. "The most important task is to head the enemy off between Fuschun and Mukden. Every Division will therefore, regardless of loss, advance as rapidly as possible in order to reach the Hun-ho this same day. Small hostile detachments are to be left alone." It started in the early morning. The 3rd Army received orders to push back the enemy at all costs and cut his line of retreat.

That night General Kuropatkim decided to retire to TIELING, and ordered General Sarubaief (of the IVth Siberian Army Corps) to

collect 48 battalions at TAWA and cover the retreat.

The Japanese 1st, 4th and 5th Armies were now pouring northwards towards the HUN-HO along parallel tracks. The 3rd was making violent and continuous attacks from the north-west but with little success, as the Russians in its front were being rapidly reinforced. The 8th Division was ordered to fill the gap between the 2nd and 3rd Armies. The cavalry were engaged at HAUSIENTUN.

9th March.—The Russian retreat was aided by a blinding snow-storm which lasted most of the day. The Japanese 3rd Army received orders to abandon the attack and reach further north, the 9th Division passed north on the 1st. The Russians, who had hourly been receiving reinforcements in this locality, had therefore, by dint of desperate counter-attacks, succeeded in keeping open their line of retreat to Tieling. The 2nd Japanese Army closed northwards. The 1st and 4th reached the Hun-ho; part of the 1st crossing the river; all had been delayed by the storm. Advance troops of the 5th reached Fuschun and found the enemy strongly entrenched to the North.

On this night the Russian Troops received orders for the retreat on Tieling, the Commander in Chief was in Sandsisa. The right

wing extended north to TUNTSCHONSI.

10th March.—The withdrawal was carried out. The 2nd and 3rd Russian Armies became hopelessly mixed. Units south and south-east of Mukden retired first, followed by those south west and west of the town. A mixed force was assembled to delay the advance of the Japanese 4th Army east of Mukden, which on the night previous had stormed the redoubts south east of Mukden on the south bank of the HUN-HO. One Division of this Army facing about north east of MUKDEN, took the Russians with Artillery and Machine gun fire as they debouched northwards from the town. The Russians here lost 5,000 dead and 12,000 prisoners. The Japanese 1st Army was fighting its way north-west. The 2nd Division on its right wing, being unaware of the strong Russian position north of FUSCHUN, got very severely handled before the Russians retired in the evening. The 5th Army remained that night in the neighbourhood of FUSCHUN.

Thus ended a fortnight's battle, the greatest in the Manchurian war. Isolated detachments of Russians were captured here and there, several escaped eastwards round the rear of the Japanese 4th Army. The pursuit was carried out by the 3rd and 5th and part of the 1st Armies.

The total Russian losses were:—

10 Generals (9 wounded, 1 captured)

2,128 Officers

89,305 Rank and File (14,000 killed, 26,500 prisoners including 5,000 sick).

The Japanese lost 41,000 Officers and men.

Lt.-General Von Caemmerer of the German Army, author of "The development of strategical science during the nineteenth century" considers that Marshal Oyama was wanting in boldness in the execution of his scheme for a great enveloping battle. He points out that the Japanese General Reserve was standing idle in rear of the centre, when it might have been in echelon on the outer wing of the 3rd Army, and have obviated the necessity of these flank movement of Divisions in the face of the enemy. He maintains that if this had been done, and if the Japanese Commander-in-Chief had been



bold enough to risk a much weaker centre at the outset, then "victory would have been his a whole week sooner and with much more decisive results." He thinks that perhaps Marshal Oyama was nervous about his great extent of front, and points to Moltke's opinion "too great an extent of front entails a certain risk, but conceals at the same time the germs of great success." He also remarks on the danger of the 3rd Army's wheeling movement in face of the enemy, and wonders why it was not executed like that of the 5th Army, so as to approach bearing on the enemy's flank.

Considering the Russian dispositions, he is struck by the fact that their right wing was en lair, inviting envelopment, and moreover, in a country more adapted to fighting than the left. He thinks that there should have been four Corps in rear of the right as an independent mobile wing, for defensive purposes or for a decisive counter-attack, and remarks that in any case General Kuropatkin might have sent eastward the General Reserve of one and a half Corps at Mukden, which was nearer, and at his own disposal; instead of robbing the 2nd Army of its own Reserve (The 1st Siberian Army Corps). He shows that even as late as March 3, victory was "within the grasp of the Russians."

"The Japanese envelopment, when approaching the Russian entrenchments west of Mukden, had become a long thin line without any reserves" with Burger's brigade of 8 Battalions on its left rear, connected by a strong cavalry division with the 3 Russian divisions

already west of Mukden.

In the Russko-Yaponskaya Voyna of the Russian General Staff it is stated that *even* on the morning of the 15th (i.e., 28th February) ignoring the above mentioned report of General Grekof, the Commander-in-Chief inclined more to the idea of bringing about an independent defeat of the enemy on our left flank.

Finally, towards the morning of the 16th February (1st March), in view of the series of reports from our cavalry, and the fierce attack on our skirmishing corps, it was evident to all the Army that along the Liao-ho to the North was stretched the whole Army of Nogi—

why then hesitate in making a definite decision?

\* I do not say that it was necessary, immediately on the 16th, to strike at the enveloping Army of the enemy; no! this was not possible, in view of all the mistakes in disposition and of our unsuitable position; but it was necessary even then to put a stop to all hesitation, and for every man to strain a point, for a great and resourceful effort towards the concentration of a powerful blow against the bold risky movement of Nogi. If that had been done on the 16th February, then, on the morning of the 18th (3rd March), we would have been able to assemble from the Xth Corps—32 Battalions, 72nd Division—16 Battalions, Ch. XVIth Corps 24 Battalions, one Division from 3rd Army 16 Battalions, a brigade of the existing reserve of the 2nd Army 8 Battalions, 1st Siberian Army Corps, 21 Bat-

<sup>\*</sup> Colonel Debrovolsky of the Russian General Staff, from whose account I translate this direct.



talions, Total 120 Battalions; to which, on the morning of the 19th (4th), it would have been possible, if successful, to add the other units of the 2nd Army, amounting to 56 Battalions.

These 120 Battalions were actually assembled (with the exception of the brigade of General Burger detached from the line); but they were assembled on the 20th (March 5th) and not on the 18th (March 3rd) and at that time two days meant much.

#### RUSSIAN ARMY.

### COMMANDER-IN-CHIEF—General Kuropatkin. CHIEF OF STAFF—Lieutenant-General Seacharow.

In the order from East to West.	Batta- lions.	Squad- rons and Sotnias.	Field and Mountain Batteries.	Field and Moun- tain Guns.	Heavy Guns.	Machine Guns.
1st Army, Genl. Linevitch						
East Detachment with Mad						
ritow and Maszlow	23	23	7	54		8
III Siberian A. C	15	18	8	64		8
II Siberian A. C	20 32	2	9	72   50 :	•••	8
IV Siberian A. C I Army Corps	30	4 3	11	86	•••	
With A. H. Q	4	3	11	80	•••	
WICH A. II. Q		<u>°</u> _				
Total	124	53	45	356	•••	24
3rd Army, Baron Bilder- Ling.						<del></del>
VI Siberian A. C.	16	6	6	48	•••	
XVII Army Corps	32	12	12	96		
V Siberi n A. C	28	4	12	96	•••	!
Total	76	22	30	240		
2nd Army, Baron Kaulbars			_			16
I Siberian A.C	30	6	. 8	64	••-	
X Army Corps	28	2	14	112	•••	16
VIII Army Corps Mixed Rifle Corps	32 24	2 2	12	96 72	•••	
337 4 D - 4 b 4	8	36	9	12	••	4
•••						36
Total	122	48	45	356	36	
AT THE DISPOSAL OF COM-						
MANDER-IN-CHIEF.						
Inf. Regt. 146	4		•••	•••		
1/3 Amur-Coss. Regt	•••	2	•••		•••	
72 Inf. Div	16		6	48	•••	16
XVI Army Corps	24	•••	9	72	•••	
Total	44	2	15	120		- 16 
DISTRIBUTION DOUBTFUL.						
009 14 Dant	4			·		•
5/6 Ussuri-Coss Regt	*	5	•••	•••	•••	
1/2 Orenburg-Coss. Div		12	2	12	•••	•
Mortar Artillery			10	60 ,	•••	·
Old Field Guns, horsed			6	48	•••	12
Heavy Guns, unhorsed					<b>2-3</b> 00	
	4	17	18	120	2-300	12
Total	370	142	153	1,192	2-300	88

In addition during the battle, 9th and 10th Rifle Regiments = 4 battalions.

#### THE BATTLE OF MUKDEN.

#### JAPANESE ARMY.

#### COMMANDER-IN-CHIEF—Marshal Oyama. CHIEF OF STAFF—General Kodama.

In the order from East to West.	Batta- lions.	Squad- rons.	Field and Mountain Batteries	Field and Moun- tain Guns.	Heavy Guns.	Machine Guns.
OTH ARMY, GENERAL KAMA-						 
MURA.	0			0.4		1
Reserve Division	! 8 : 8	. 1   1	4	24	•••	
Reserve Division	12	3	6	24 36	•••	•••
ll Division	12		U	30	•••	
At A. H. Q		<del></del>				
Total		5	14	84		
ST ARMY, GENERAL KU'R-			_			
Division	. 15	3	7	42		
2 Division	18	3	8	46	•••	•••
Juard Division	12	3	9	48	•••	•••
Ata H Q	9		4	24		
Total	54			60	•••	
ITH ARMY, GENERAL NODZU.			_			
0 Division	12	3	7	42	•••	
Reserve Division	12	1	2	12	•••	•••
Division	12	3	7	42		
At A H.Q	18		18	108	•••	•••
Total	51	7	34	204		
ND ARMY, GENERAL OKU.			-			
Division	12	3	7	42	•••	•••
Division	12	3	7 7	42	•••	•••
Division	12	12		42	•••	•••
Cavalry Brigade		12	1	6	•••	•••
At A.H.Q	18	***	•••		•••	•••
Total	54	21	22	132		
BRD ARMY, GENERAL NOGI						
Division	12	3	7	42		•••
Division	12	3	10	60		•••
Division	12	3	7	42	•••	•••
Cavalry Brigade		12	1	6	•••	•••
At A H.Q	6	••• j	20	120	•••	•••
Total	42	21	45	270		•••
AT THE DISPOSAL OF COM-						
MANDER IN-CHIEF	i	;		1		
Reserve Brigades	18	}	••.		!	
Division	12	3	7	42	•••	•••
Total	30	3	7	42		
DISTRIBUTION DOUBTFUL.						
I. (1.	1		İ		170	
leavy Guns	•••		··· J			200
dachine Guns	/					200
Total strength	263	66	150	392	170	200

#### INCINERATION IN THE FIELD.

#### BY LIEUT. COLONEL B. S. KINNER, R A.M.C.

The spread of disease in Armies in the Field is a matter of such serious importance to the Commanders, that any method of sanitation which removes the sources of disease must appeal to them, as affording a means of conducting subsequent campaigns with a minimum wastage of men from those causes which are classed as preventable. Among such are Enteric Fever, Dysentery, and Cholera. By destroying the evacuations of men who are suffering or have suffered from these diseases, a fruitful source of their propagation is abolished for ever; and as it is impossible to say that in a crowd of men there are no sources of infective diseases existing unknown to the carriers, it is necessary that the destruction of all evacuations should be carried out for the whole crowd. By these means the whole camp and the entourage are kept sanitary and also free from "nuisances."

If the evacuations can be burnt in camp, as they are now being burnt in Cantonments, the desired destruction of the germs of disease can be effected in the Field where, as shown by history, Armies

have been destroyed by epidemics caused by these germs.

The principle of incineration, to be bacteriologically successful, requires that the excreta of the whole population shall be removed, without soiling the ground, into a fire wherein they shall be destroyed completely.

They must, therefore, be received into an impervious vessel and conveyed into the incinerator; and the arrangements of the incinerator must be such that they will ensure complete combustion of the

excreta.

This is carried out in Cantonments by means of earthen vessels for the reception of excreta; in these, rubbish or litter is placed to soak up the liquid. The vessels after use are emptied into a furnace, which consists radically of a grating near the base of a chimney. The fire is started by the ignition of litter and sweepings arranged upon the grating, more being added, from time to time, as required. The result is a fine ash which is sterile; i.e., it is free from germs. It is useless as garden manure unless mixed with other soil, because it contains no germs.

This principle can be successfully imitated in the field as

follows :---

Light iron receptacles are necessary for the latrines, in the proportions of 4 per company or 6 per squadron. Kerosene oil or other



<sup>•</sup> A heap of this ash left in a garden will be found to be free from vegetation for weeks after it has been deposited, except at the bottom where vegetation will be seen creeping in from neighbouring ground.

tins are required for use as urinals, to be placed near the latrines by day, and about the camp or bivouac at night. These (the urinals)

are charged with litter or sweepings nearly to the top.

For the incinerator, ten light iron bars 4 feet in length are necessary. There should be two sets of bars, the second set being carried on by the foremost baggage, so as to be available as early as possible at the next camp. This permits of the first set being left at the old camp while the refuse is being burnt up.

The first duty of the sanitary party on arrival in camp will be

to lay out the pans ready for use.

The next duty will be to make mud for the building of the

incinerator. The mud should be stiff.

The mud having been prepared, it is moulded into the shape of small bricks. These are then placed in a circle with an inside diameter of 3 feet; the circle is broken at 4 equi-distant points for a space of 6 inches. The mud should then be piled up as a wall, which, when 6 inches height has been reached, must be made continuous so as to cover the spaces originally left to form the draught openings. (See diagram).

After another 2 inches in height have been added, the bars are laid across, and laid so as to project mainly on one aspect so that they

can be gripped for withdrawal.

Next, the building is continued until the wall is 3 feet high. The incinerator is then ready for use, having taken an hour or less to

put up.

Incineration is effected in exactly the same manner as in Cantonments, with the result that the Camp will be kept free from dirt and litter; all the excreta will be burnt off into sterile ash, and when the force moves away it will leave behind it ground whereon subsequent parties of men may camp without acquiring any disease gerins such as, in the present day, form the legacy of those who have last occupied the site.

The system has now been practically tested by a Battery of R.H.A. while marching, and while at Practice Camp, and subsequently by Cavalry and Infantry, both British and Native, at manœuvres;

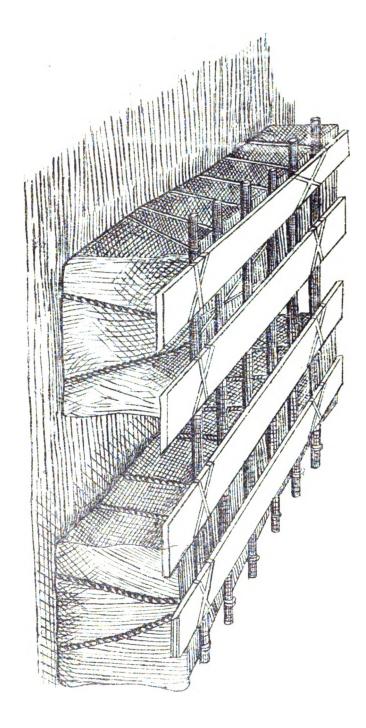
and on all occasions has acted efficiently.

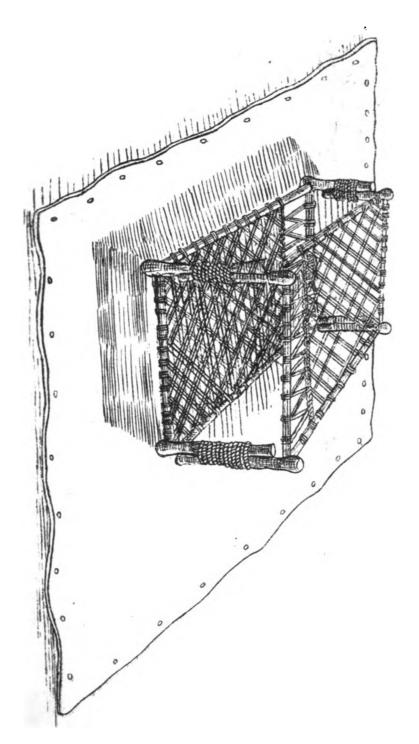
As transport for the requisite materials is not authorised, makeshift arrangements had to be made for their carriage during these tests. And this item of transport is the part of the system which requires exact demonstration for purposes of organization. The total weight to be carried for an Infantry battalion is about 160 lbs., i.e., the equivalent of one mule load. This is sufficient for ordinary marches, when the battalion is not split up. And probably it would be found to be sufficient on service, when units are liable to be split up, and when it would be necessary to provide each detachment with incinerator materials. For on service it is nearly always possible to collect tins, and scraps of iron, such as the bands round bales. If these were used for the stationary bodies, the special transport and materials would be available for detachments. Although one mule

## Elevation Bar lovel G.line Draught opening Feet

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UN/L ZOF load is the total weight to be carried, it would be advisable to provide two mules per battalion or regiment of Cavalry in order to expedite the transit of the incinerators on ordinary marches, and to make some provision for detached parties. This point can only be finally settled by experiment when trial has been officially approved. But in the meantime this paper has been put forward as it deals with a procedure which must appeal to the Army at large, because it indicates the means of accomplishing satisfactory sanitation in the field.







#### A SIMPLE AND EFFECTIVE RAFT.

By Major Chesney Cook, 7th Hariana Lancers.

#### Materials. The following materials are required:-

4 Charpoys.

2 Tarpaulins large, or 4 small.

6 Poles or rafters, or 8 lances.

6 Planks if available are useful but not absolutely necessary.

Lashings and ropes—Transport slings can be used.

Time and men.

Buoyancy.

Ten men can get the raft ready in a quarter of an hour after the materials have been collected.

The raft can be loaded safely up to 13

cwt.

Materials are easily obtained; ropes and tarpaulins or water-proof sheets are with the baggage, lances with the men, and charpoys and rafters can be found in any riverside village. The raft is very quickly made with unskilled labour.

Disadvantages.

The raft will not stand bumping on rocks or snags.

(a) Place a tarpaulin flat on the ground.

#### Method of construction.

- (b) In the centre of this put a charpoy upside down, that is with its legs in the air.
- (c) On this charpoy superimpose a second charpoy leg to leg.

(d) Lash the four pairs of legs strongly.

(e) Fold the tarpaulin over and lash.

(f) Repeat the process with the second pair of charpoys. In this way two air tanks for the raft are formed.

(g) Place the two air tanks side by side about 1½ to 2 feet apart.

(h) Lay the poles or lances across and lash to air tanks.

(i) Planks if available can now be laid across the poles to form convenient seats for the men.

If there are no tarpaulins of sufficient size, two waterproof sheets can be joined together rapidly and effectively in the following manner:

- (k) Lay the two sheets flat on the ground, one on top of the other.
- (1) At one side bend over a 3° fold twice or thrice, then open back the top sheet. This fold remains water-tight when the joined sheets are fastened round the framework.

#### PRECIS OF FOREIGN MILITARY PAPERS.

#### GERMAN PAPERS.

#### Militär Wochenblatt.

One of the December issues of the above journal describes a "cooking-box" in use in the Austrian Army, which is said to be most simple and effective, and well adapted for use in mountain warfare. The article starts with a dissertation on the absolute necessity of an army being provided with movable kitchens, and quotes the case of the Russo-Japanese war as exemplifying their advantageous employment. The tenacity with which the opposing forces held on to, and attacked, positions in spite of the unfavourable elimatic conditions is ascribed, in great part, to the provision of warm food, by means of field-kitchens, to the troops in actual contact with the enemy. Field kitchens become more necessary as the difficulties of provisioning the troops and the demands made on their fighting capabilities increase. In mountain warfare, "cooking-boxes" take the place of so-called "field-kitchens." They consist of a caldron, made of compressed steel, with an air-proof screw lid.

Before the march, the caldron is put on the fire, and the water containing the constituents for the meal is brought to the boil. The lid is then screwed down, the contents having a temperature of from 110° to 120° centigrade. The caldron is then removed from the fire and put in an outer covering of cork or flannel, and placed in a box constructed for carriage on transport animals. Each animal carries

two boxes, each of which contains a meal for 25 men.

Each company, therefore, requires 8 boxes or 4 transport animals. The actual cooking of the food, which takes place inside these boxes, continues for three or four hours, at the end of which time the temperature of the contents has come down to 80°. During a short halt the food can be distributed and consumed; and if the duration of the halt allows of it, the caldron can again be filled and brought to the boil, so that the evening meal can be served out immediately on arrival of the troops in camps. The advantages of men being provided with a hot meal during the day and immediately after the operations of the day are over, are too manifest to need detailing.

The paper dwells on the importance of the immediate introduction of these cooking-boxes which, in actual experiments by Austrian troops, have given such favourable results, and deprecates any postponement until a more perfect model has been invented. It advocates the inclusion of the "cooking-boxes" in the first line of transport, as in the event of a collision with the enemy, they can

easily be removed to a safe distance.

In one of the February issues of the Wochenblatt, a long article deals with the employment and education of "observers." The

regulations lay down that observers must assist leaders, but contain comparatively few instructions as to how this assistance is to be afforded. In all movements of the skirmishing line, at least two observers must accompany the officer in command. They assist him in observing the enemy and watching their own troops in their immediate vicinity—they are only allowed to take part in the firing when, on account of their close proximity to the enemy, they are no longer able to carry out their special duties. The author then particularises in greater detail the duties of the observer, which consist in judging distance, discovering signs of the enemy, any impending tactical changes of position, watching the effect of the fire of their own troops, and keeping up communication between different units and the officer in command.

To be able to carry out such and many other similar duties, the author insists that the selection of men to act as observers requires great care, and that, when once they have been selected, they should be carefully educated up by constant practise to a high degree of efficiency.

In actual practice, observers are generally chosen at the last moment as the troops fall in. They are changed on each occasion, they are not accustomed to work with the officer they are to assist; although the utility of observers is accepted in theory, nothing is done in practice to derive full benefit from them. The author urges that the men used as observers should be specialists and struck off all duties, so as to enable them to become specialists. To thoroughly carry out their duties, they should acquire considerable tactical knowledge, be able to read a map, and be well educated. It is pointed out that unless an observer is well trained in the art of observation, he will waste his time through ignorance, and will not know to what part of the country to direct his special attention-observers should always work in couples, and one at least should be provided with a powerful field-glass. Before drawing the attention of their officer to any particular point, the two observers will consult and thus corroborate each other's observations, and the officer's attention will then not be disturbed except to observe something which is of real importance. The observers should divide up the country between them, and each can then concentrate his attention on one portion of the field. Observers should, therefore, have a good eye for country and quick perceptive faculties.

When the advance against the enemy is first begun, the officer will explain carefully the general situation, the information already obtained, his intentions, etc. This will not only interest the observers but enable them to take an intelligent interest in later developments. Constant employment with the same officer will form an excellent education in itself for a keen and smart soldier, and will assist him becoming later on an efficient non-commissioned officer. Observers should be able to take down, in writing, clearly and precisely, any orders or information dictated to them, and do so if even they receive the same only in a few brief words.

#### FRENCH PAPERS.

Revue Militare Suisse,—December 1908.

An article on guns to be used against balloons marks the interest now taken in aeronautics as applied to military purposes.

The success of the more recent types of dirigibles renders it necessary to discover some means of attacking these machines in war.

The mobility and speed of flight of the perfected types of dirigibles place them beyond the reach of the ordinary gun even if transported by motor-car. It is in fact proposed to equip these balloons with the means of fighting one another in the air. But in any case some arrangement is required to enable guns on the ground to take their share of the duty of protecting an army from its aerial enemics.

These latter may be expected to be sent out on an outbreak of hostilities to watch the concentration and the points of detraining on landing (in sea expeditions), to observe preparations in forts, to note movements of ships on the sea or on inland waterways, etc.

In due course movements and marches, positions before, during or after the combat, location and composition of reserves, field works, etc., etc., all will come under the notice of the dirigible. But the whole of these movements and events must of necessity take place within a more or less limited area. It follows therefore that in order to prevent the balloon from carrying out its observations, the method to be pursued is to provide a number of guns at suitable points, such as detraining stations, bridges, forts, important naval or military stations, etc., also to furnish marching columns with guns, especially on the flanks and rear, and lastly to include such weapons in the armament of ships of war.

The object of the guns will be to destroy the airship or at least to put it to flight or prevent its descent to a convenient altitude for observation. A distance of  $10 \ km$ . (6 miles) and a height of  $1,500 \ m$ . (1,639 yards) constitute about the permissible limits from which observations can be made with any degree of success.

It next remains to consider the peculiar properties required of a gun for use against dirigibles. For a balloon rifle fire is practically useless both by reason of its limited range and because the bullets do not possess sufficient power to tear the envelope. The balloon's safety lies in its power of altering its direction at will in both vertical and horizontal planes, and in its speed (Count Zeppelin's airship travels 15 m. or some 39 feet per second); the vulnerability lies in the dimensions of the bag, its fragility and its liability to explosion.

The gun used against the airship must therefore have an unlimited lateral field of fire and a very extensive capability of vertical fire.

These conditions are not difficult to fulfil in the case of a gun mounted on a pivot such as is used in naval mountings, or for an automobile platform. In the case, however, of a field mounting the matter is not so simple. The arrangement adopted in some experimental types is to provide articulated axle-trees. In these the two ends are hinged and are turned round in the direction of the muzzle, until the wheels on the axle-tree arms are tangents to a circle drawn with the point of the trail as centre. This enables the gun to be traversed 360° without difficulty. The movable portions of the axle-tree are kept rigid by a locking arrangement. The usual system of traversing the cradle on the axle can be employed for small variations and fine laying.

To obtain a possible angle of elevation of at least 60° the trunnions are placed either at or below the breech. An arrangement for counteracting the preponderance to the front in the form of a spring on the elevating screw or some such device then becomes

necessary.

In the case of the fixed pivot mounting it is often desirable to economise weight, e.g., for an automobile. This is obtained by reducing the height of the pivot. As a low pivot allows no space for the gun's recoil, the principle of the differential recoil is employed. With this system the gun is loaded in the "run back" or recoiled position. When loaded the gun "runs up" and when it reaches the limit of run the gun fires automatically, and the force of recoil returns it to the loading and travelling position.

A feature of the elevating system is the fact that at high angles the amount of elevation to be given to the gun for a given range decreases as the height of the target above ground increases. This is provided for by a special mechanism in the elevating gear. The functions of laying and elevating are performed by separate men of the detachments. The layer's duties are confined to keeping the

gun on the target.

Lastly, the system of automatic breech closing is necessary to

ensure rapidity of working.

Guns on these principles have been built by the Krupp firm and tried with success. In one experiment two captive balloons formed the target. There was a high wind which kept the balloons in violent motion at a height of about 60 m. (196 feet.) The range was about 1,600 m. (1,749 yards). One balloon was hit at the second round and the other at the fifth. Both came down immediately.

The shell to be used against a balloon depends on the nature of the injuries that can be inflicted. These are escapes of gas, explosion of gas, damage to screw, engines, planes; etc. The best effect would be produced by a high explosive shell bursting inside the balloon. For this purpose a very sensitive fuze which would be set in action by impact on the envelope is suggested. Another

proposal is that the point of the projectile should carry a chemical composition which would ignite by a reaction with the hydrogen gas in the balloon and set the latter alight.

Furthermore, as observation of fire at a target in the air is extremely difficult, the use of projectiles which contain a smoke producing and flame producing composition has been proposed. The composition burns during flight and the smoke and flames escaping from lateral apertures render the trajectory plainly visible by night as well as by day.

These smoke producing shells were used in the experiment

mentioned, with satisfactory results.

The correspondents in this number mark the progress of aeronautics. In Germany there are now three accepted types of dirigibles for military purposes—the "rigid" (Count Zeppelin), the non-rigid (Major Parseval) and a type which comes between the other two, "semi-rigid." In America, Captain Baldwin of the U.S. Signal Corps has brought a dirigible successfully through its trials. The envelope is 60 feet long and consists of two thicknesses of silk with India-rubber between. The 32 H. P. motor weighs 120lbs. only. There are four lateral planes for steering purposes.

The headquarters of the balloon corps is to be at Fort Omaha (Nibraska). The American theory of the use of balloons in war is that they should be employed chiefly to operate against ships at sea. It is true that at the Hague the Americans alone of all nations undertook not to attack ships from balloons but they reserved the

right to reply if attacked.

Expert opinion calculates that a balloon should carry 30 or 30 high explosive 30-lb. projectiles. The weight might be reduced by substituting some other material for the ordinary steel envelope of

the projectile. Wood very possibly could be used.

The Budgets of the various armies for 1909 are noticed at some length, but the most interesting point seems to be the report by M. Gervis on the French War Budget. Among other things the introduction of the machine gun is to be pushed on. Within two years M. Gervis says there will be 4,000 in service. For next year 200,000 francs will be spent on horses for these guns and 12,610,000

francs on the guns themselves.

Further the question of the rifle is brought to the front. The French rifle is now 22 years old, and besides the fact that the mechanism is rather out of date, the arms in the hands of troops are wearing out and their accuracy leaves much to be desired. Mr. Gervis considers therefore that the manufacture of rifles to the 1886 pattern should cease forthwith and the question of the issue of a new rifle should be taken up at once. He calculates that it will take three or four years to rearm the troops. 332,000 francs is to be devoted to automobile transport (as against 400,000 francs last year) of which 100,000 francs will be spent in the purchase of motor wagona and another 100,000 francs in experiments.



### ITALIAN PAPERS.

# Rivista d'Artiglieria e Genio.

The October issue is in no way below the usual high standard.

An open letter to a cavalry general, who had given a lecture in Rome on the subject of machine guns, exposes the defects of these

weapons from a tactical point of view.

The writer demurs to the general principle that the machine gun, as representing a multiple rifle, replaces infantry with advantage on account of the small space occupied by it. He considers that in fact this theory only holds good in mountainous or marshy country, in street warfare, etc., and generally in situations where space is limited. But where space is not limited the necessity for distributing men and rifles and for occupying the ground renders the use of the machine gun of little advantage, if not indeed harmful.

Similarly when the ground is covered with thick vegetation it is necessary to occupy it in all parts and cover the field with fire in all directions. Therefore, in such situations machine guns are entirely unsuited for the work. The writer supports his opinion by the experience of some recent managuves in rich vegetation near Verona. In every case questions to commanders elicited the reply that machine guns, had they been available, would have been useless.

Again, the writer contests the suggestion that machine guns should be used for artillery escort work. The object of the escort is to protect the guns from infantry and cavalry by keeping them at a distance. If machine guns are used for this purpose they must therefore be stationed at some distance from the guns, and if so they require in their turn to be protected by an escort. This condition therefore renders these weapons useless for escorts.

Machine guns with cavalry give that arm a fire power which it lacks in ordinary circumstances; but this does not mean that the presence of machine guns allows cavalry to dispense with dismounted work in the attack or defence of localities. And this for the reason that the mere throwing of a certain number of projectiles into a given locality is not of itself sufficient to accomplish any result. The weapons which fire the projectiles (if on the defensive) must occupy a certain perimeter and materially fill the space; while in the attack the weapons must advance against each and every of the defender's posts. Otherwise the principal arm for all purposes would be the gun and not the rifle, and the infantry would be reduced to the role of escort to its artillery. Therefore, though very useful as an adjunct to cavalry, machine guns must not be considered as enabling the men always to remain mounted.

In retreats the use of machine guns for the rear guard is sound; for the same reason that the use of guns is sound, the rear guard fights not to conquer but to gain time, and to do this opens fire at long ranges to compel the enemy to deploy. Machine guns are well adapted for this work while their mobility gives them an advantage over artillery.

This number also has an article on the regulations for machine

guns in the Austrian army.

It is pointed out that whereas in other armies machine guns are treated like artillery, in Austria they form part and parcel of the cavalry and infantry units to which they are attached, and may be compared rather to the ancient regimental guns.

The orders of fire are salvoes of anything up to 50 rounds, inde-

pendent fire (the normal order of fire) and single shots (rarely).

It is laid down that machine guns should be used against infantry in dense formations for choice, and not against lines of skirmishers; in the case of artillery as the bullets make no impression on shields oblique fire should be the object. In taking up a position the main element to provide for is concealment, enabling the fire of the guns to come as a surprise to the enemy. Fire should be opened at long infantry ranges.

The heavy expenditure in ammunition and the difficulty of obtaining water to cool the heated jackets of the guns make it impossible to keep up the fire for long periods. Therefore fire should take the form of sharp and sudden but violent bursts. For these reasons machine guns can never take the place of artillery, and

this fact must always be borne in mind.

Machine guns should not be used singly. They are generally used in important positions, and if there is only one gun a jam interrupts the fire. On the other hand groups of more than two are deprecated, as with larger numbers the shields and the steam are apt to reveal the gun's position to the enemy's artillery, which is fatal.

In taking up a position it will, as a rule, be necessary to unload the guns from the horses and transport them by hand in order to keep under cover. A too restricted front is not permissible on account of the losses which will be incurred. The ground must be most accurately reconnoitred and ranges ascertained. This is of greater importance for machine guns than for any other arm.

On the offensive these weapons may act on the flanks and wings of the opponent to protect the march of their own infantry; they

may riddle the main point of attack with bullets.

On the defensive machine guns may reinforce threatened points, impede the enemy's turning movements, repel assaults and assist counter-attacks.

But on every occasion the firing should be short and sharp,

anything in the nature of a prolonged duel must be avoided.

A constant and reliable supply of ammunition is of course a necessity and this is obtained by the fact that (in Austria) every gun is accompanied into action by five ammunition horses carrying a total of 10,000 rounds.



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will be able able of the opening of nostilities (or before), and watch the opening of the openitation of troops, at least in its large Rifle or shrapnel bullets are processing the shrapne is hit the small 1. or such or such surapnel bullets are practically surapners. If the envelope is hit the small hole made allows so little in the balloon's ascensional power is not again that the balloon's not numerous. If the enverope balloon's ascensional power is not affected; in the enverope that the balloon's ascensional power is not affected; in the enverope that are not numerous. A burst actually are the chances of a hit are not numerous. m to that the that are not numerous. A burst actually on the chances of a hit are not numerous. A burst actually on the the chances of a hit are not numerous. A burst actually on the the chances of a hit are not numerous.

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Consequence, and recognised at once. It will behave the general more is seen and recognised against every eventuality to is seen and record against every eventuality, to widen his plan than ever to provide against his blow should be than ever to produce that his blow should be certain and of operations and to ensure will victory be to the entermined and of operations and More than ever will victory be to the enterprising capable weighty who knows when to strike and how For such weighty when to strike and how. For such a man the man who will point the way to success. man who am point the way to success, balloons will point argued on the

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# Rivista d'Artiglieria e Geneo-November 1908.

The November number is rather technical, but an article on "The Efficiency of Shrapnel Bullets" taken from a German source is of interest.

It has been frequently asserted that in the last war the shrapnel bullets had not sufficient power to put men and horses out of action. This theory forms the basis of the French claim that the greater weight of their shrapnel bullets give their field artillery an advantage over the German, and that the wounds from these bullets are more serious than those produced by small calibre rifle bullets.

The author General von Rohne by way of support to this opinion, gives a number of statistics taken from experiments carried out by the French Colonel Journée on bodies both of human beings and horses.

From these it appears that the  $vis\ viva$  in kgm, per  $cm^2$  of the section of the projectile required is—

	Т	o wound.	To break a bone.	To smash a bone.
Man	•••	2	5	$16 \ kgm.$
Horse	•••	10	17	35 "

From these figures the remaining velocities are worked out; and from another table compiled by General von Rohne it appears that to produce a wound in a man the German 1906 gun bullets weighing 10 grammes must a have remaining velocity of 71 m. per second; the French 75 gun 12 gramme bullets require a remaining velocity of 68 m. for the same effect. Again to smash a bone in a man the German shrapnel bullets require 170 m., as remaining velocity, the French 161 m. only.

It is, however, considered important to take into the calculation the distance of burst from the target. Including this factor and allowing for the velocity imparted by the bursting charge another table shows the remaining velocities at a range of  $3,000 \ m$ . (3,280 yards) for certain guns. From this it appears that including the velocity of  $50 \ m$ . gun by the burster, the French shrapnel bullets with a distance of burst from target of  $50 \ m$ . have a remaining velocity at  $3,000 \ m$ . of  $270 \ m$ ,; while the German bullets under similar conditions have  $262 \ m$ . only remaining. Again with a distance of burst of  $200 \ m$  the French figure is  $180 \ m$ , and the German  $156 \ m$ ,

## THE INFLUENCE OF DIRIGIBLES ON THE MILITARY ART.

This article is a compendium of opinions from German and French magazines for and against the dirigible in war.

Clausewitz is quoted as saying "War is the domain of the uncer-Three parts of the matters on which action is based in war are always immersed in a more or less dense cloud of uncertainty."

Experience bears out this theory. But now it may be asked whether the dirigible will dissipate the "cloud of uncertainty"?

Even now automobile balloons are capable of reconnaissance work under favourable conditions. In the future it is certain that the great powers will be provided with machines which will be able to cross the frontier on the opening of hostilities (or before), and watch and report the enemy's concentration of troops, at least in its large aspects.

And fire arms are of but restricted use as a prevention of such reconnaissance by balloon. Rifle or shrapnel bullets are practically ineffective. If the envelope is hit the small hole made allows so little gas to escape that the balloon's ascensional power is not affected: and the chances of a hit are not numerous. A burst actually on the

balloon may be considered as outside the probabilities.

It will then be unfortunate indeed if in the future a commander is not aware from the beginning of the general lines on which his opponent's action will be based; and this information will continue to be kept up to date in a way which the best cavalry cannot now hope to emulate, nor spies attain. It follows that the greater part of Clausewitz's uncertainty will disappear, and this means that the strategic art will be considerably influenced.

But it is not to be supposed that the task of the commander is made easier by the information at his disposal. On the contrary the general of the future will find his work more difficult than that of his predecessors for the reason that his opponent is as well informed as himself. The uncertainty is dissipated on both sides.

Consequently surprise is no longer possible and every mistake is seen and recognised at once. It will behove the general more than ever to provide against every eventuality, to widen his plan of operations and to ensure that his blow should be certain and weighty. More than ever will victory be to the enterprising capable man who knows when to strike and how. For such a man the balloons will point the way to success.

It is further argued on the one hand that the dirigible is all to the advantage of the defence. For though the details of firing lines may not be distinguishable to the observer in the car the masses of the reserves and their position will be clearly discernible; and this knowledge removes the element of surprise which is the chief principle of the attack.

On the other hand it is urged that though the reserves and the direction of their movements may be discovered and reported by the balloon, it is then too late to take advantage of the information.

But for the offensive to know the position of the defender's troops is of considerable utility since it enables the general to decide on and organise the form of attack most suitable. For these reasons it is considered that so far from the dirigible turning the balance in favour of the defence, its assistance will in fact render the attack more formidable than ever before.

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A third gun (Krupp's) with bullets weighing 9 grammes only and avelocity due to burster of 60 m. gives remaining velocities of 261 and 147 m. for the 50 m and 200 m. bursts respectively. (In the other table this last gun was shown to require a remaining velocity of 71 m. to produce a wound in a man.) At 300 m. distance of burst the figures are Krupp 101, German 111, and French 135.

It appears, therefore, that even at a distance of bursts of 300 m. all three gun's shrapnel have sufficient remaining velocity to inflict

a wound in a man.

At the same time it is admitted that the heavier bullet inflicts the more serious wound; but it is contended that this is more than compensated for by the larger number of the lighter bullets which can be contained in a gun shell and consequently the greater percentage of probable hits. For, carrying the analogy down to rifle bullets, it is pointed out that though an increase in the vis viva of the rifle bullet would probably result in a corresponding increase in the number of serious casualties, this would not make up for the great advantages of the small caliber projectile (flatness of trajectory and large number of rounds carried). For it is argued that in a battle the object is to obtain the victory and this may best be achieved by placing the largest possible number of men out of action even though only for a short period; mortal wounds are not necessary.

The December issue is rather technical, but a long discussion of the much debated question as to whether a Q.-F. battery should have 4 or 6 guns seems to be worthy of study. After a lengthy examination of the pros and cons in France and Germany and elsewhere, the author sums up with an opinion that as a matter of fact there is little to choose between the two systems. Only rarely can the 4-gun battery be admitted to have any real superiority; but it may be granted that if an army is stronger in guns for army corps than

its probable adversary, it may safely employ the 6-gun unit.

The 6-gun battery may be considered the more economical, but it requires an extra echelon of wagons (as opposed to the 4-gun unit) closely connected with it though independently organised. For every gun must have at its disposal at least  $2\frac{1}{2}$  wagons (the author considers 5 the correct number theoretically with  $2\frac{1}{2}$  as a minimum), whereas a battery commander cannot control more than 18 to 20 vehicles. Germany has increased the light ammunition columns with an artillery regiment (6 batteries) from one to two, the unit being 6 guns.

Austria-Hungary for the present retains the 6-gun organisation, but it is believed that opinions are divided and that it is possible

the 4-gun battery may yet obtain the preference.

On the theory that a numerically superior artillery may be organised on the 6-gun system, it follows that a numerically inferior artillery is practically compelled to keep to the 4-gun unit. For if the superior adversary has 4-gun batteries the inferior must follow suit, and if not the inferior employs the 4-gun organisation to compensate for his deficiency.



Applying his theory to Italian conditions the author considers that for that country the 4-gun unit is compulsory; for the probable enemies will certainly be superior in guns; while the nature of the terrain in the possible theatre of war renders the employment of

small, handy units very desirable.

This number notices the great activity now being displayed in the French arsenal and factories for war material. Large orders have been placed, chief among which are those for machine gun equipment. It is stated that within six months every infantry and cavalry regiment will be provided with 4 machine guns and a first issue of 6,300 rounds of ammunition. When this work is completed it is understood that a new rifle will be put in hand to bring the French infantry up to date.

## SPANISH PAPERS.

#### Memorial de Artilleria.

The November number contains many items of interest from which one or two have been taken below.

A comparison of the losses in the Russo-Japanese War of 1904-05 with those of the Germans in 1870.

A large number of figures are given of which the following appear to be the most interesting:—

## Wounded.

	Russians	•••	122,700 = 20.8  p	er cent.
1. In the field	Japanese Germans	•••	136,500 = 25.3	,,
		•••	85,500 = 13.2	,,
	Russians	•••	141,800 = 24	,,
2. Including sieges	Japanese	•••	171,400 = 31.7	,,
2. Including sieges	Germans	•••	99,600 = 15.3	"
Killed (in the	he field and	died o	f wounds).	
	(Russians	•••	23,600 = 3.9	,,
1. In field warfare -	Japanese	•••	44,200 = 8.2	,,
1. In field warfare	Germans	•••	20,000 = 3.1	,,
	Russians	•••	34,000 = 5.8	,,
2. Including sieges	Japanese	•••	58,900 = 11	,,
0 0	Germans	•••	28,300 = 4.4	<b>»</b>

# Officers.

	No. p	er 1,000	combatants.		Losses.
Russians	··· •	19	•••	•••	9
Japanese	•••	20	***	•••	13
German	•••	28	•••	•••	7
The percents	ages ar	e based	on the numbers	enga	ged.
Russians	_	•••	•••		590,000
<b>Japane</b> se		•••	•••	•••	540,000
Germans			•••	•••	650,000

Losses through sickness based on the numbers present at the theatre of war, say—Russians 699,000, Japanese 650,000, Germans 815 000.

	(Russians	•••	358,400=51·3 per cent.
In Hospital	{ Japanese	•••	334,100=51.4 ,
-	Germans	•••	480,000 <del>=</del> 59· "
	Russians	•••	9,300 = 1.3 "
Died from sicknes		•••	27,200 = 4.2 ,
	Germans	•••	14,900= 1.8 ,

Total losses killed wounded and missing (in relation to the numbers engaged).

0 0 7	Russians	•••	180,460 = 30.6	per cent.
In field warfare	Japanese	•••	176,400 = 32.7	- ,,
	Germans		106,000 = 16.3	39
•	(Russians	•••	<b>2</b> 08,600=35·3	**
Including sieges	Japanese	•••	$227,500 = 42 \cdot 1$	>>
	Germans	•••	129,700=20	,,
Losses in the princi	pal battles.			
Saint Privat	French   Germans	•••	8,330 = 6.3	,,
Daille I II vae	(Germans	•••	19,700 = 9.7	,,
Liao-yang	Russians Japanese	•••	16,500 = 11	"
		•••	<b>24,000</b> 18·5	**
	Germans	• • •	14,100=22	"
Mukden	Russians	••	59,800 = 19.3	**

# Losses in certain corps.

#### Russians.

3rd Rifle Regim	ent			1,400 = 66	pe <b>r cent.</b>
1st "	>>	$\mathbf{Mukden}$	•••	1,700 = 61	33
122nd Infantry	,,	"	•••	1,600=57	"

# Japanese.

11th 1	lnfantry	Regiment a	t Mukden	•••	1,780 = 68	,,
21st	29	39	,,	•••	1,280 = 51	"
41st	"	,,	,,	•••	960 = 39	,,
<b>42nd</b>	,,	,,	,,	•••	1,522 = 62	31

#### Germans.

16th Infantry Regiment at Mars la Tour 1,700=68 11th Grenadier Scuadar " 1,100=51 Battalion of Rifles of the Guard at Saint	"
Dainet 494 - 10	

The article remarks that the losses (other than those from sickness) in 1904-05 show a large increase in comparison with those of 1870. In the field operations for instance the proportions are 1 to 1.6 between Germans and Russians and 1 to 2.1 between Germans and Japanese. The difference is attributed to the length of time over which the combats extended, and the superior efficiency of modern weapons. In 1904-05 the four principal battles occupied 40 days, which in 1870 the 18 chief engagements together only lasted 27 days. On the other hand, however, in 1870 there were 228 days of fighting in small affairs, while in 1904 only 37 days were spent in minor combats.

The average loss per day of battle works out to 3,632 Russians, 3,650 Japanese and 3,055 Germans; but still the relative numbers per diem are less in 1904 than in 1870, working out to 1.7 per cent for Russians, 2 per cent for Japanese and 4.7 per cent for Germans.

The battles of the extreme East were extremely sanguinary, as a consequence in actual fact of the efficiency of the weapons. The defenders entrenched themselves, and the attackers hesitated to expose themselves and to advance. This tended to lengthen the combat, and so to increase the losses. Another deduction drawn from the fact of the Japanese losses being nearly double those of the Russians is that the attacker suffers most.

From the fact that of the wounded three Germans died for every Russian and for every two Japanese, it appears that the modern small calibre high velocity bullet does indeed merit the qualification humanitarian which has been applied to it, and that modern methods of treating the wounded are a long way in advance of those of thirty or forty years ago.

It is also once again demonstrated that at medium ranges wounds in the head or heart are mortal while those in the stomach are curable; whereas at short ranges all wounds are serious owing to the shock and the shattering effect of the high velocity at which the bullet travels.

The disproportion between the deaths of the two sides in relation to the wounded is due to the fact that the Russian on being hit was usually carried to the rear at once by his friends, while the Japanese, besides being the assailant, had to lie where he was till the medical parties came up.

Turning to the losses from sickness it is remarked that typhoid attacked 73,400 Germans and 30,000 Russians, while in 38,600 and 30,000 cases respectively dysentery was the disease. In the Japanese

army there were numerous cases of beri-beri.

But generally speaking the figures testify to the progress of medical and surgical science. The hygienic conditions prevalent in 1904-05 were as a rule better than in 1870. The extensive use of tea as a drink served to prevent the infection of the water. Added to this the good quality of the clothing worn, the use of moving kitchens, the pureness of the air, the abundance of sunlight and the absence of tropical diseases may all be considered as factors in the good health of the troops.

The reason the particular battles mentioned were selected was that these showed the heaviest losses in the two wars (no Japanese figures were available). It is remarked that in several cases both Russian and Japanese divisions lost over 25 per cent of their strength, in one instance (a Japanese brigade at Mukden) rising to 90 per cent. This is quoted as rebutting the theory that large bodies cannot stand losses over 25 per cent, although it is admitted that the theory refers to a single day's fighting, whereas these losses were spread over a struggle prolonged through several days.

The proportion of the three arms in Manchuria were as follows:—

	Cavalry.	Artillery.	Infantry.
Russians	1	1.6	14.5
Japanese	1	$2 \cdot 4$	24

As out of every 100 killed and wounded in the Russian army only 3 and in the Japanese army 4 were artillery men, the theory that in the future artillery will never be able to fight in the open receives no support from this war, as this rule was not followed therein.

In conclusion, it is remarked that this war does not bear out the conclusions deduced from earlier campaigns to the effect that modern war would be less sanguinary than formerly. But this was at least in part due to the special circumstances. The war was a war of positions, not of manœuvres, and the lengthy struggles gave full scope to the destructive powers of the modern firearm.

#### NEW BULLETS.

The same number has some notes on new bullets for firearms. The German Engineer Puff has taken out a patent for a rifle bullet and a corresponding patent for the rifling of barrels. The principle is that the bullet should present the maximum surface to the pressure of the gases in the bore and the minimum to the resistance of the air. This is obtained first by pressing out a sort of rim in the cylindrical portion of the bullet, which serves as a driving band or gas-check; and secondly, by reducing the depth of the grooves in the rifling from the point of maximum pressure to the muzzle. The bullet is forced into the deep grooves on discharge and the resistance offered makes the full power of the gases to develop; while by the time the projectile leaves the muzzle the driving-band has been pressed down to the same diameter as the body of the bullet. This last fact has been proved by measurements of fired bullets.

Experiments have been carried out with a considerable measure of success. The muzzle velocity developed was high as compared with that ordinarily obtainable and with the energy and the power of perforation were largely in excess of those given by the German S bullet.

In Denmark experiments have been made with a bullet for pistols, for man-stopping purposes at short ranges. The principle adopted is to increase the initial velocity and the density of section of the projectile, and at the same time to reduce the calibre of the weapon. These changes tend to produce higher ballistics and to increase the powers of penetration. But inasmuch as the conditions are unfavourable to the transmission of energy, they are not altogether suitable for increasing the man-stopping effect. For this effect depends directly in the energy transmitted to the man by the bullet on impact.

However, Mr. Schoubre of the Reky Vrifel Sindicat of Denmark has constructed an automatic pistol with which he uses aluminium bullets on these principles.

Penetration and power trials carried out in comparison with a German regulation revolver showed that for very short ranges the Schoubre pistol was in every way superior; but at 50m. (54 yards)

the revolver regained its superiority. At 250m. the remaining velocities were equal for the two weapons while the energies were on a level at 20m. At one metre from the muzzle the velocities were 526.3m for the pistol against 214.9m. for the revolver. At 9m. from the muzzle nearly 10 yards) the pistol bullet had a remaining velocity of 489m. against 215m for the revolver. The weights of the bullets were 4.06 grammes (pistol) to 17.7 grammes (617 to 262.3 grammes) and the calibres 11mm. pistol and 10.5 (revolver) or 1,433 and 417 inches.

## Memorial-November.

This number also has some interesting notes on Field "Artillery in the Combat" taken from other publications.

Artillery has recently learnt a new lesson. The heavy losses in the lengthy battles of Manchuria drove this arm to take up positions under cover with the result that the line was split up into groups, sometimes as small as single batteries, separated from one another by accidents of the ground. This rendered control extremely difficult and necessitated recourse to various means of communication, as telephones, optical signalling, etc. Moreover, unless by a fortunate chance, neither side was able to obtain the range of the opposing batteries. This led to a disastrous waste of ammunition in an attempt to search all the ground behind the protecting obstruction

From this the conclusion may be drawn that the rule that artillery should take up positions under cover should by no means be considered as absolute. Such a procedure is not infrequently very undesirable.

Moreover, there are many occasions when artillery are compelled to fight in the open, as for instance in the support of infantry advancing. Again the ground is by no means invariably favourable to covered artillery positions; in such a case as that of artillery in rear of deployed infantry it may often happen that there will be one line of guns under cover and another in the open. At St. Privat there was no shelter for the batteries supporting the infantry, but had the guns retired the infantry could not have held its ground.

Covered positions are necessary during the preparation of the combat, when the situation is not clear, when the enemy's artillery is much superior in numbers, and when it is desirable to economise guns; but not otherwise.

The Manchurian war has drawn attention to reconnaissance, to intercommunication and control of fire, to breaking artillery up into groups, and to a consideration of the desirability of occupying covered positions.

But it has not proved the absolute necessity of the latter in all circumstances. On the contrary it has shown that no fixed rules can be laid down; the circumstances of the case must be the deciding factor.

The December number is chiefly technical but the January number teems with good things.

# Memorial de Artilleria—January 1909.

This interesting issue contains among others an article on "The True Lessons of the Naval Battle of Tsushima."

All naval powers have felt the influence of this action, but many of the alleged "lessons" learnt therefrom are by no means to be depended upon. For instance the theory that the heavy guns of the Japanese ships secured the victory which is said to be responsible for the construction of the "Dreadnought" class is (according to this authority) entirely erroneous.

Russian, French and more recently German writers have exposed this error; indeed even when on all sides (shortly after the war) the part played by the heavy ordnance was proclaimed to be predominant, a German semi-official publication said that Tsushima was preeminently a battle of medium calibre guns and that the Japanese superiority in these natures of ordnance was the main source of their success.

To-day the opinion generally prevalent is that it was the fire of the great quantity of medium guns using high explosive shell which brought about the defeat of the Russians. These guns pierced the armour, blew up or set fire to the ships and destroyed the personnel.

Similarly it is now believed in the battle of a year before Tsushima when Admiral Witheft was killed, the medium calibre projectiles were the chief cause of the Russian retreat to Port Arthur. The reports made at the time that the heavy guns were mainly responsible was due to the fact that the destructive effect of modern shell had not heretofore been experienced and it was not realised that the damage could have been inflicted by any but the largest shells. So also was it argued that the ranges were too great for medium guns. But these, as represented by the 15 cm. (5.9 in) of 45 calibres are perfectly capable of shooting up to 12,000m. (13,123 yards). Whereas in this battle the ranges were between 7,000 and 8,000 m. (7,655 and 8,749 yards) indeed it is certain that ranges much beyond these are not practicable, between ships in motion in naval warfare. At Tsushima Togo maintained a range of 3,000 to 4,000 m.

Some authorities point to the accuracy of the heavy gun at long ranges; but this contention has no weight in naval matters, for the disturbing factors (such as the motion of the ships) are so numerous that absolute precision is of relatively small account; on the other hand the greater numbers of medium guns are bound to produce a larger proportion of hits than the smaller number of heavy pieces.

If, nevertheless, ships armed solely with heavy guns are actually much in evidence, it is not so much a consequence of Tsushima as the natural result of the evolution of the ship of war.

The real effect of heavy projectile is unknown, no nation being willing to disclose the results of experiments. But it is to be supposed that shell will be used with large calibre ordnance as well as armour-piercing projectiles; and if this is so, it can, says the

author, be understood that the English authorities confine the armament of "Dreadnoughts" to heavy guns and with a few light torpedo guns. But it is a question if a larger number of medium

guns would not have been preferable.

One thing that Tsushima undoubtedly did make clear is that speed is of paramount importance in naval war; a numerically inferior fleet may be able, if endowed with superior speed, to make up for its adversary's superiority in numbers. England has always recognised these truths, and continues to take the lead in speed with the object of compensating for any temporary inferiority in numbers.

Another article gives some figures of interest showing the comparative naval and military expenditure of the principal powers of late years. In millions of francs the total expenditure on these objects compares as follows (the year is apparently 1906):—

Million France

	Muuro	n rrance	9.	muu	m rance.
England	·	1508	Russia	•••	1315
Germany	•••	<b>12</b> 88	U. S. A.	•••	1215
France	•••	1045	Austria	•••	571
Italy	•••	360	Japan	•••	244
Taking mili	tary and	l naval e	xpenditure separ	ately:—	
Ū		Army.	•		AVY.
	Milli	ion Fran	cs.	Millio	m Francs.
Russia	•••	1030	England	•••	801
Germany	• • •	956	U. S. A.		<b>584</b>
France	•••	718	Germany		<b>332</b>
England	•••	707	France	•••	327
U. S. A.		631	Russia	•••	<b>2</b> 85
Austria		511	Italy	•••	120
Italy	•••	240	Japan	•••	107
Japan	•••	<b>13</b> 6	Austria	•••	61
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These figures represent increases per cent. in the 13 years from 1893 to 1906 as shown below. The lion's share is of course that of the naval expenditure:—

Total increase per cent Increase per cent in naval

	811	ice 1896.		expenditu	re sın
England	•••	83	•••		120
Russia	•••	99	•••		100
Germany	•••	51	•••		227
U. S. A.	•••	142	•••	•••	268
France	•••	29	• • •	•••	28
Austria	•••	30	•••	•••	
Italy	•••	3.8	•••	•••	25
Japan		306	•••	•••	400

According to the source from which these figures were obtained, however, Germany, in spite of its enormous increase in expenditure, has not yet got a sufficiently large navy; for it is argued that in the year under consideration the German mercantile marine ranked as second in the world after the British (3.5 million tons against 17 million tons) whereas the fleet took fourth place only.

## RUSSIAN PAPERS.

(Voyenni Sbornik—December 1908.)

THE DON COSSACK DIVISION IN MISHCHENKO'S CAVALRY RAID.

This article is written by Colonel Philimonof, the Chief Staff Officer of the Division, which arrived at the front in October 1904, after the battle of the Shaho. The Division was posted on the right flank of the line occupied by the Russians after the battle. No maps existed of the country between the railway and the river Hun-ho. Colonel Philimonof at once detailed an officer to prepare one of the country held by the Division and as far south as the presence of Japanese permitted. Rumours that a large force of cavalry would be formed to strike a blow at the Japanese communications were rife in the Russian camp. On October 29th, the Chief Staff Officer of the Don and Orenburg Cossack Divisions were summoned to confer with the G.O.C. of the 6th Siberian Army Corps as the possibility of such an enterprise. That Army Corps was, however, shortly afterwards transferred: camp rumour then declared, and quite correctly, that General Mishchenko would be appointed to command the force.

Colonel Philimonof on 29th November forwarded a memorandum to General Mishchenko giving his views on the situation and

on the course to be adopted.

This document was divided into three heads:—

(1) Appreciation of the situation and objective.—The Japanese lines of communication fall into two groups-(a) the waterways and the railway, which supply their left flank; (b) the roads leading through Fin-khuanchen and Korea to the sea, supplying their centre and right flank. This latter group is strategically more important: a successful movement in this direction would cut the Japanese off from their retreat to the sea vid Korea and eventually throw them to the west of the railway. The terrain being mountainous is unsuited to the operations of our army and favourable to the enemy. Should it be decided to attack group (b) it would be necessary first to distract the enemy's attention by an attack on group (a) carried out by a force of cavalry. This force should endeavour to break the railway, and by drawing on itself considerable forces of the enemy and creating a general condition of alarm in the rear of his army, assist the operations of our main force.



2. Strength of the force.—The force should be superior to the cavalry that the Japanese could concentrate against it. They have now 17 squadrons on the left flank; a force of four to five regiments is therefore the minimum required. The larger the force, the greater the confusion created on the Japanese lines of communications. Such confusion will be of political importance too, as it will show the whole world the precarious position of the Japanese army. There would be one battery of Horse Artillery for every two regiments.

3. Choice of time and direction.—The force should be launched at a time so calculated that its operations should produce their maximum effect at the moment when our main army takes the offensive. Further, in order to secure freedom of action, it will be necessary to wait until the rivers are frozen sufficiently

to permit the passage of troops.

The Japanese left flank proper is extended to the river Hunho by a line of fortified villages, supported by more elaborate fortifications at three points. Of these the westernmost is Sandepu, which it would be necessary to take, if the cavalry column is to follow the left (eastern) bank of the Hun-ho. Even when the first line is forced, the cavalry would be surrounded by lines of Japanese fortifications.

An advance to the west of the Hun-ho promises much better results. The column can pass through the open country on the west bank, cross the river on the ice and find itself directly in rear of the enemy, with a wide field open to its enterprise. It might from that position detach a small force to attack the lines of communication and fall itself on the rear of the Japanese main army.

On January 5th, 1905, the General Officer Commanding the Don Cossack Division was summoned to confer with General Mishchenko "on important, secret and urgent business." The news that this order had been received ran through the Division with electrifying effect. The G. O. C. was directed to concentrate at Sifantai, the general rendezvous of the column, on the 8th.

Regiments were ordered to move as strong as possible after excluding men and animals unlikely to stand the march. The men carried a day's ration of biscuit, cooked meat and oatmeal, seven days' supply of tea and sugar, 200 rounds each and camp kettles. Reserve ammunition and medical appliances were in two-wheeled carts; a two days' supply of biscuits and flour and all the demolition material on pack animals—officers were allowed one animal for two. A supply column of 1,500 pack animals was also organised. Teleshef the G. O. C. Don Cossack Division, begged Mishchenko to dispense with this unwieldy encumbrance and to rely for food and forage on local supplies. In actual fact, the Don Cossacks drew nothing from the supply column throughout the raid. It usually arrived in camp seven hours later than the troops, and, under the strain of

forced marches, gradually dwindled till only one-sixth of the original animals remained. Mishchenko stated that he was compelled to take the supply column with him as he had a direct order from Kuropatkin to that effect.

The force consisted of 53 sotnyas of Cossacks, 18 squadrons of Regular Cavalry (Dragoons) and 24 guns. It marched in three columns, which maintained touch by means of patrols, on January 9th the main objective being the Japanese stores at Yingkow (near Ninhwang).

The left column was under Major-General Teleshef, the central, under Major-General Abramof and the right under Major-General

Samsonof.

Six sotnyas were told off to break the main line of railway Liaoyang-Port Arthur. They formed three detachments of two sotnyas each, with an engineer officer and demolition material and some men of the Frontier Guard attached as guides. Unfortunately these "guides" had not been selected from men who had served in the districts to be traversed. They were therefore useless and their work had to be done by Chinese. These detachments reached the railway but only effected minor damages, which were rapidly repaired.

During the first day's march, 9th January 1905, no opposition was encountered. On the 10th January some Chunchus endeavoured to dispute the passage of the Hun-ho. They were charged by the Daghestan Regiment and driven off. The left flank guard also found Chunchus holding some villages along the Hun-ho. They were driven out by artillery fire and an attack by dismounted Cossacks.

The column was unable to move at 7 A.M. on the 11th January owing to the exhaustion of the transport which only arrived in camp

late at night.

Whilst on the move to Niuchwang about 120 Chinese arbas

with the supplies for Japanese army were captured.

By order of the C. O. C., Don Cossack Division, Colonel Philimonof with one sotnya made a reconnaissance to the east and south of Niuchwang and found that there was no enemy in force; the entire force camped for the night about 5 miles to the south of Niuchwang. On the following day (12th January) the raid on Yingkow was to be made: General Mishchenko's dispositions for which were as follows:—

1. A mixed force under Colonel Khoranof, which included 3 sotnyas from the 4th Don Cossack Division and which was made made up from various cavalry units, was to attack at dusk from the north immediately on conclusion of the artillery duel. Total strength 6 squadrons, 9 sotnyas and 4 companies mounted infantry.

2. In order to prevent Japanese reinforcements from coming up by rail 5 sotnyas under Colonel Shuvalof were sent to destroy the

railway between Yingkow and Dashichao.

3. Don Cossack Regiments under Major-General Stoyanof, each consisting of 5 sotnyas, were to make a demonstration from the east,

but when the main attack under Khoranof was launched they were to join the left column under Teleshef.

4. The entire artillery with the force was to shell Yingkow.

5. Six sotnyas were detailed to look after the transport.

6. The remaining troops were divided into three columns, one of which under Abramof (11 sotnyas) was to remain in reserve at a

village 6 miles north of Yingkow.

Those columns were to leave the mid-day halting place at 3 P.M., and advance direct on Yingkow. The left column under Teleshef consisted of 15 sotnyas of the Don Cossack Division, 5 other sotnyas and a battery. The right column under General

Samsonof consisted of 11 sotnyas and a horse battery.

The troops detailed to destroy the railway between Yingkow and Dashichao arrived near the railway at 4-20 p.m., but the demolition material necessary for this purpose was not with the advanced cavalry but in rear with the main body, and consequently it was not possible to carry out this part of the programme at once; whilst the demolition materials were still being awaited a train was seen approaching from Dashichao with Japanese reinforcements. Seeing that the Russian cavalry were moving parallel to the railway with the intention of cutting them off from Yingkow the train was run at full speed into Yingkow, whilst the Japanese maintained a hot fire from it. After the train had run into Yingkow the cavalry succeeded in destroying the line. The commencement of the raid was thus hardly successful, for the Japanese had succeeded in getting their reinforcements through to Yingkow.

About 5 P.M., the Russian artillery opened fire, to which the Japanese made no reply; an enormous store depôt was set on fire, the light from which was of great assistance to the defenders;

otherwise our shells seemed to be devoid of effect.

When the artillery opened fire the Don Cossacks commenced their demonstration on the Japanese right; they got to within 600 paces of Yingkow station about 8 P.M., when Stoyanof received an order from Teleshef to retreat, as Khoranof's force had already started the main attack.

It was almost dark when the main attack was made on Yingkow from the village of Daguanshan (about 1 mile north of Yingkow); the Russians had to cross a space lit up by the fires from the burning stores in Yingkow. The Japanese fire was deadly and the first attack was beaten back. Half an hour afterwards the attack was renewed and again repulsed with heavy losses, yet a third attempt was made but without success. The raid had failed.

Colonel Philimonof ascribes the failure of the raid on Yingkow

mainly to the following causes:-

1. The direction of the attack on Yingkow was ill-chosen; the attack was not directed at the enemy' rear and the destruction of the supplies there, even if it had been effected by the cavalry, would not have been very serious for the Japanese.

2. The large and cumbersome pack transport taken with the force.

3. In place of a few cavalry patrols sent to destroy the railway an entire cavalry regiment should have been sent.

4. Khoranof's force was a mixed one; he himself had only

just arrived, knew nobody and nobody knew him.

5. Shuvalof's force had its demolition material not with the advanced part of the column but behind the main body.

## THE MAIN CHANGES IN THE RUSSIAN ARMY IN 1908.

#### Russki Invalid.

Numerous changes have taken place during 1908 in the Russian

army.

A question which has for a long time troubled the Russian authorities is the shortage and low standard of efficiency of the officers of the army. By the nature of the conditions of service junior officers have practically to do the work of N.-C. Os., as the latter are of a very low standard of intelligence; independence and initiative among junior officers are consequently all the more desir-New rules for the encouragement of initiative in all grades of the army have therefore been introduced, whereby senior officers can only interfere in the work of their juniors when the latter actually infringe the regulations or exhibit reprehensible inactivity; in the event of senior officers thus interfering they have to report in writing that they have done so. Junior officers, on the other hand, are forbidden to ask their seniors for explanations and guidance in cases where the decision rests within their own powers. It is of course impossible that the mere issue of regulations for the encouragement of initiative can produce the desired result, more particularly in Russia where the regulations and instructions for training, etc., enter into greater detail than in other European armies and thus limit initiative to a very great extent, but it is at any rate a step in the right direction.

The shortage of officers may be ascribed to the following

(1) m

(1) The large number of civil billets which carry better pay.

(2) The inherent dislike of the Russian middle class to the profession of arms.

(3) The limited openings for junior officers on account of the

work required from them.

To improve matters the following important changes have been made.—

(a) increased pensions as a tentative measure up to 1911 after which date the revised scale is to be finally brought in:

(b) increase of pay; a very substantial increase to officers' pay

has been sanctioned from 1st January 1909.

This increase of pay varies according to rank from £20 per annum for a 2nd-Lieutenant to £70 per annum for a Lieutenant-Colonel. This increase makes the present scale of officers' pay

nearly equivalent to that of an officer in the British army, but it must be remembered that the cost of living in Russia is much lower, there are fewer cuttings from a Russian officer's pay and generally the expenses of, and social requirements expected from, a Russian officer are much less costly than with us. In addition the increase of pay each officer on first joining is given the sum of £20 by Government, half of which is for the purchase of Government pattern revolver, sword, field glasses and compass, and the other half for personal expenses. Finally, the camp and batta allowances have been raised to the following scale:—

Camp Allowance—

Field officers, 3/2 per diem. Junior officers, 2/1 per diem.

Batta-

Field officers, 4/9 per diem. Junior officers, 3/2 per diem.

The increased rates of pay apply to all units and staffs. A point that is worthy of note, and which in these days of slow promotion and "blocks" might well be copied elsewhere, is that after five years in the rank a Lieutenant-Colonel receives an additional £18 per annum and Majors and Captains an additional £12 per annum after four years in their respective ranks.

New regulations have been issued limiting the numbers of senseless transfers of junior officers from company to company and to detached duties; these transfers are now confined to special cases.

To improve the general standard of efficiency among officers various minor regulations have been introduced, the most important of which are—

- (a) new regulations for promotion to the rank of field officer;
- (b) the institution of musketry courses for Staff Captains with a view to fitting officers to hold the command of a company.

The Chief of the General Staff is now subordinated to the War Minister; in 1905, at a most critical time, he was for some unknown reason independent of the latter, which meant dual control and all the evils consequent thereon.

The whole system of the study of oriental languages by officers is under consideration and new regulations are shortly to be issued; commissions have been sitting during 1908 on this subject and the result of their labours may shortly be expected. It is understood that greater facilities, opportunities and pecuniary awards will be offered to officers desirous of studying oriental languages, particularly Chinese and Japanese.

All drill books and training manuals have been revised and brought up to date; where necessary, entirely new editions are to be issued.

The Headquarters Artillery Department has been reorganized and placed on a sounder working basis. Various new regulations

concerning the Intendance have been issued, all of which tend to simplify the working of this most important branch of the army.

As regards the private soldier little has been done beyond doing away with, to a very large extent, the irksome duty of orderly, patrol (civil and military) and sentry over barrack gates, entrances, etc., all outside and non-military duties have been cut down to the lowest minimum possible. The soldiers' vodka ration has been done away with and a light wine or beer and where desirable a better food ration has been substituted for it.

Finally, various changes in uniform have been introduced, which cannot be called an improvement and certainly neither lower the cost of uniforms nor introduce a more workmanlike and comfortable form of dress.

Other minor changes have taken place during the year, but they hardly call for remark as they are but the work of officials who must, at any cost, justify their existence.

The machine gun question is attracting considerable attention and the January and February numbers devote some space to its

(Mitraillenses d'infanterie et mitraillenses de cavalerie).

The mistakes made by France in 1870 discredited the machine gun for a quarter of a century. But it is now rehabilitated. Switzerland in 1898 led the way by attaching maxims on tripod mountings (with pack carriage) to its cavalry. Germany followed in 1902 with machine gun batteries; and other powers were in the act of making experiments when the Russo-Japanese war placed the whole question outside the bounds of argument. Machine guns had come to stay. The war itself was a striking lesson. The Russians started with hardly any machine guns; at the end they had 88 at Mukden and were vainly trying to get more. The Japanese started with a few guns, but at Mukden they had 200 and later 320.

The present and proposed condition of affairs generally is roughly as follows:—

France.—Pattern of gun Puteaux St. Etienne; probable total number 4,000.

Germany.—Maxim. 16 batteries and 2 per regiment in 12 regiments.

Austria.—Schwarglose. In 1908 there were 79 guns with infantry, 8 with cavalry and 44 with landwehr infantry; there will be in future two guns for every active and landwehr regiment (cavalry and infantry) and also some 86 "sub-divisions" of two guns in addition.

Russia will have some 3,170 guns; 4 guns are attached to

each infantry regiment.

Japan.—Hotchkiss. There will be 1,500 improved pattern guns. The organisation is for infantry a 6-gun battery and for cavalry an 8-gun battery, attached to regiments and brigades respectively.

All the other powers have made progress in the adoption of these weapons.

With cavalry machine guns are an absolute necessity (it may be observed that the opinions herein expressed are by no means on all fours with those in an Italian article noticed elsewhere). Cavalry has few opportunities for the use of shock tactics and the use of the machine gun enables this mounted arm to carry out its fire tactics more easily and effectively, and adds to its power of resistance; it allows of more freedom of movement, prevents the transformation of cavalry into mounted infantry.

Many examples are quoted from the Far East. At Natschend in June 1905 a Siberian dragoon regiment was repulsed by a Japanese party of one regiment of infantry supported by cavalry. A Russian cuirassier regiment came up with six machine guns. The Japanese, although they had advanced to within 300 metres. could not get the range of the machine guns and were obliged

first to halt and then retire with heavy loss.

At Wafangu, June 1904, a Japanese cavalry brigade brought its machine guns to the assistance of a cavalry regiment which was hard pressed by the Russians and relieved the situation. At Pensihu in October 1904 Kanin's cavalry brigade was opposed by a mixed Russian force. The Japanese brought up their machine guns and opened fire at 1,200 metres. In a few minutes the enemy withdrew under a hail of bullets leaving 600 dead on the field.

The experience of the Japanese Captain Matsuda whose machine guns rendered brilliant service is considered to settle the question of means of transport in favour of pack carriage. Wheeled transport whether with four horse teams or one horse equipment proved a complete failure in Manchuria for machine guns with

cavalry.

As far as Infantry is concerned the necessity for the machine

guns is universally admitted.

But its advantages are probably more striking on the defensive where ranges can be estimated with accuracy and there is no difficulty about ammunition supply. The machine acts as a very mobile reserve of fire.

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On the offensive the machine gun is unsurpassed for pressing an enemy and concentrating fire rapidly on important points. It is being suggested that they can take the place of artillery in support of an infantry advance. The idea is that in face of medium quick-firing artillery guns cannot advance with infantry. A more mobile and less vulnerable substitute is required; and this is furnished by the machine-gun. The latter can establish itself within 400 or 500 metres of the enemy and pour a hail of bullets on any desired point.

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no steep gradients and the men feel no fatigue.

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## REVIEW OF BOOKS.

# "Topographical Surveying and Sketching," by Thomas H. Rees, Major, Corps of Engineers, United States Army.

In the introduction this book is described as a text-book compiled from lectures delivered to student officers at the U.S. Army Service Schools, Fort Leavenworth, Kansas. It is published by this Institution.

Its scope, as is implied by the title, covers in general the work of the Military Surveyor as well as that of the Sketcher, but, while embodying much which is beyond the requirements of the latter, it does not deal sufficiently fully with the theory and methods of rigorous survey to enable the student who has fully mastered its contents, and the manipulation of the instruments described, to go into the field with the confidence that he could execute a reliable survey, under the conditions which may obtain in a hostile country with no supplementary technical knowledge. From the point of view of our own army, which finds itself in almost every campaign in countries of which reliable topographical surveys do not exist, no method is so valuable as triangulation for rapidly locating prominent features, and fixing ruling points which will form the skeleton on which the lesser details can be built up as opportunity serves, though occasions do arise on which it is unavoidable to commence with a traverse, notwithstanding the attendant disadvantages of cumulative errors and relatively restricted area covered in a given time. In the volume under review, however, the greatest stress seems to be laid on the use of the transit and stadia, by which the sketch is built up, by traverse methods, and neighbouring detail plotted and contours carefully calculated before determining and plotting the positions of more remote but important points.

However suitable this may be for the land surveyor, it is not the best method for the maker of a military map or of a rapid reconnaissance survey. The ideal seems to be a wrong one, a fact which has been realised in our own service schools comparatively recently. It is true that in the chapter on the use of the plane-table the need for a preliminary triangulation is pointed out, but the attention of the beginner is not drawn to the general applicability of the principle.

The definition and explanations generally are clear, and the adjustments of instruments lucidly described, except that in certain cases the language employed pre-supposes a wider acquaintance with the terminology of the subject than can commonly be expected of a beginner. For a text book too little is given, and for a manual of reconnaissance sketching the broad and vital issues are overmuch buried in a mass of detailed descriptions. The numbering of the plates is not consecutive, and they are hard to find, amid the text, in the absence of an index.

The need to standardize scales is not insisted on, and the permissive range of choice may lead the surveyor to adopt an unusual scale which might lead to confusion when reading the map in the field.

Doubtless, the requirements in view of which the work has been published differ from those to meet which our War Office text book and manuals are intended, but the distinct sub-division of the subject into two parts, military surveying and military reconnaissance and sketching, tends to avoid confusing the object of each of these two classes of work.

We have to acknowledge the receipt of the following books:—
German Official Account of the Russian War, Wa-Fan-Gou
and actions preliminary to Liao-Yang. Authorised translation by
Kaul Van Dout. Price 10s. 6d (Presented.) (Hugh Rees, Ltd.,
London, 1909).

Some Principles of Frontier Mountain Warfare. By Bt.-Major W. D. Bird, D.S.O. Price 1s. net. (Presented.) (Hugh Rees, Ltd.,

London, 1909).

Squadron Drill Simplified. By Capt. H. Maddick, 5th Lancers. Price 1s. 6d. (Presented.) (Forster, Groom & Co., Ltd., London, 1909).

Catechism on Field Training. By Lt.-Col. Plomer 1st Battalion Royal Irish Fusiliers. Price 3s. net. (Published by Gale & Polden, Ltd., London, 1909).

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## GOLD MEDAL PRIZE ESSAY, 1909.

The future of the Native Officer, the extent to which the system of direct Commissions as opposed to promotion from the ranks should be resorted to. The scope of his employment, and the possibility of providing for him a wider career, whether within or outside the Army, having regard to past History, present conditions, and aspirations.

By Major E. M. J. Molyneux, D.S.O., 12th Cavalry.

Motto.

"Every means should be taken to attach the soldier to his colours. This is best accomplished by showing consideration and respect to the old soldier."—Napoleon.

Few, if any, questions concerning the efficiency of any army are of more vital importance than the quality of the officers who are to train that army in peace and to lead it in war. No army led by inferior officers has ever been able to effect very much, whilst, on the other hand, history, our own above all others, teems with examples of the overthrow of the most warlike races by those of less martial instincts, provided that the latter were led by officers of the best quality, with the gift of acquiring the confidence and respect of those under their command, and of infusing into their men the spirit by which they were themselves animated.

To any one who reads aright the later history of India, Egypt, China and West Africa, the old saying, that it is better to have an army of stags led by a lion than an army of lions led by a stag, will hardly appear a paradox. We have seen, in the recent campaign in Manchuria, how the Russian soldier, admitted to be second to none

as a fighting man, was nevertheless powerless under inferior leader-A few years previously we had seen the Chinese soldier, invincible under "Chinese Gordon" unable to make more than the faintest show of resistance to the invader, when under officers of his own race. We all know how the Italian troops, when opposed to the ragged, ill-disciplined, and half-trained levies commanded by Napoleon in his first campaigns in Italy, found neither numbers nor position nor any other advantage avail them; and yet, we find that these same troops, when incorporated in the Napoleonic armies, were able to take on an adequate, and in some cases even a prominent part in the overthrow of armies composed of the hardier and more warlike races of Northern Europe. And in the Peninsular War, the soldiers' opinion that "the Dook's long nose was worth a Division" was always amply justified. In our own time, we have seen perhaps the most dramatic exemplification of the phenomenon that the world has ever yet seen, when battalions of fellaheen, drawn from a naturally timid and unwarlike population, enslaved and trampled on for countless ages, were transformed in a few years into gallant and reliable troops. As Kipling reminds us, "the everlasting miracle is the same." The history of the British conquests in India is again but one long exemplification of the same process.

We see the Sikh power crumble into the dust before armies, the great bulk of which were made up of races admittedly inferior to them in martial qualities: and, in that struggle, as in almost all of our earlier wars in India up to and including the Mutiny, the result could not be attributed to superior science or armament, but was due almost entirely to the essential qualities which are not imparted by any process of reading, nor capable of being tested in any examination hall. And the sequel to the British conquest of the Punjab was, if possible, an even more amazing revelation of the surpassing importance of leadership in war. We find there that the mutineers, usually overwhelmingly superior in numbers throughout the earlier phases of the campaign, well armed, well trained, well horsed, and far better provided with artillery and munitions of war, accustomed to habits of discipline, and with traditions of an almost unbroken record of victory behind them, everywhere succumbed to raw, hastily raised levies drawn from the very races they had recently beaten upon almost every occasion when they had met them. Nor, search, as we may, can we find any other reason for so marvellous a metamorphosis on both sides, other than the fact that the leaders were now on the other side. The exploits of the men led by Hodson, or incidents such as the charge of 61 men of the 2nd Sikh Irregular Cavalry at Keoti, in which they routed 1,200 well armed mutineers in spite of every advantage of training and position, seem to belong to the domain rather of romance than of history. The age of miracles may have passed: but this "everlasting miracle" will go on to the end of time.

The more we study the military history of the East, and more particularly of India, the more we are forced to the conclusion that

the quality of the leader, important everywhere, is pre-eminently important amongst Asiatics, and to the corollary that the selection of leaders for Asiatics is of pre-eminent importance. The failure of Russia in Manchuria and in the Crimea is rendered the more comprehensible if we realise that the Russians have been accurately described as the most westerly of Asiatics rather than the most eastern of Europeans. Given the superb fighting qualities of the Russian soldier, the completeness of his failure can hardly be accounted for in any other way. We can scarcely imagine that any European armies of equal quality would not have produced better results even under equally indifferent leaders.

One of the most striking facts in the military history of India has been that the leaders under whom Indian troops have achieved their best results have always been Europeans, since the days when Europeans first became available to them. And this fact was universally recognised long before the days when European power was paramount in India, and when the paramount power had consequently the selection of leaders. Perron, Avitabile, George Thomas, Skinner,—to mention only a few,—were men who were not chosen by the princes whom they served because of their education or attainments, or from political or social considerations: on the contrary, many of these adventurers were men of no standing even in their own country: and the literary qualifications of the deserter Avitabile, or of George Thomas, the runaway sailor, were probably far below those of the men they served. They were employed simply because they were Europeans of strong character, and experience had taught the native princes that under European leaders their troops were far more certain of victory, if opposed to troops under purely Indian leadership, than if led by the bravest and ablest of There was no question of any sentiment in the matter: on the contrary, social, political, and often religious instinct was all in favour of choosing a leader from other sources.

But it was an iron age of internecine warfare: and the consideration which prompted them to select European leaders in preference to all others was that of self-preservation. Nor could it indeed be supposed that the East Indian Company employed British Officers to the exclusion of Asiatics for any reason other than that they had been forced to the conclusion that, if their troops were to prevail, they must be led by Europeans.

A very cursory knowledge of the conditions prevailing in the early days of the Company will convince us that there was little love lost between the military and the mercantile communities: and the Company by no means regarded itself as a benevolent institution to provide careers for young Britons of martial proclivities. And the longer the stay of the English in India, the larger the operations undertaken, and the more important the interests which had to be guarded, the more fully was this policy justified.

It may be objected that the above is too well known and too universally admitted to be worth proving. I have alluded to the

With cavalry machine guns are an absolute necessity (it is a be observed that the opinions herein expressed are by no means on all fours with those in an Italian article noticed elsewhere.) Cavalry has few opportunities for the use of shock tactics and the use of the machine gun enables this mounted arm to carry out its fire tactics more easily and effectively, and adds to its power & resistance; it allows of more freedom of movement, prevents the transformation of cavalry into mounted infantry.

Many examples are quoted from the Far East. At Natsch of in June 1905 a Siberian dragoon regiment was repulsed by a Japanese party of one regiment of infantry supported by case of A Russian currassier regiment came up with six machine gains. The Japanese, although they had advanced to within 300 metros could not get the range of the machine guns and were object.

first to halt and then retire with heavy loss.

At Wafangu, June 1904, a Japanese cavalry brigade broggists machine guns to the assistance of a cavalry regiment with a was hard pressed by the Russians and relieved the situation. At Pensihu in October 1904 Kanin's cavalry brigade was opposed by a mixed Russian force. The Japanese brought up their modeling guns and opened fire at 1,200 metres. In a few minutes the cody withdrew under a hail of bullets leaving 600 dead on the field.

The experience of the Japanese Captain Matsuda whom machine guns rendered brilliant service is considered to with the question of means of transport in favour of pack carriage. While distrinsport whether with four horse teams of one horse equipment proved a complete failure in Manchuria for machine guns will cavalry.

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were instructed.



point because later on I take it as an axiom that, whilst we should do all we can to improve the lot of the Native Officer, to raise his status and increase his prospects, we should never lose sight of the fact that it is essential to the maintenance of the Indian Army in the highest state of efficiency that the great bulk of that army should be led and trained by British Officers.

In the days when fighting was constantly going on in India, or when the memory of it was still fresh in the public mind, the fact was so obvious, and so borne out by every military event, that it needed no demonstration from any quarter. There is, however, a tendency in some quarters now to theorize in opposition to even the clearest and most patent teachings of history and experience, and to argue that the Native Officer, if caught young and sent to an Indian institution resembling Sandhurst, may be manufactured into an article which will serve the same purpose as the British Officer. The Indian Native Officer has many most admirable qualities, to which I will endeavour to do some measure of justice later: but our experience of India has been sufficiently long and close to convince us that an army led by Native Officers alone, however cunningly we may cram them, will never be a match for one led by British Officers: that the essential qualities of their nature will change only when the Ethiopian changes his skin and the leopard Loyalty, courage, intelligence,—these qualities the Native Officer has in abundance, and many more besides: but his psychology is such that, for reasons which it would require a separate essay to do justice to, he always achieves immeasurably better results under The fact is incontrovertible, and so must form the British Officers. basis of all practical proposals. Academic theories, contrary to all knowledge and experience, form a poor foundation for any policy.

There is another reason for the presence of British Officers with Native regiments: and that is, that they are the only officers who are identical in race, sympathies, and interests with the rulers of India, and therefore, as a body, the only officers who could be trusted absolutely under all conceivable circumstances. This assertion conveys no aspersion on the Native Officer: it is only another way of saying that blood is thicker than water. Native Officers have to be drawn from the different races and religions represented in the ranks of the Native Army: and the only body of officers who are homogenous amongst themselves, throughout the whole Indian Army, irrespective of the race and religion of the men whom they command, is the body of British Officers. Loyalty, in the Indian Army, is a personal matter not fully realised outside of the Indian Army. The King, the Constitution, the Government, are names for which the native soldier has no doubt the highest respect: but they do not come very clearly into the focus of his vision. Orderly and docile himself, he has an inherited veneration for law and order, and for a properly constituted government. Such qualities are, however, negative rather than positive in assertion. His loyalty in the concrete is given to the leader immediately over him, if he likes and trusts him. Were this not so, the influence of that leader upon him which history and experience have shown to be of such surpassing

importance in relation to him, could not be so great.

And it follows that we are bound to ensure that this loyalty of instinct should be given to the only leaders in whom, as a body, we can place absolutely unlimited confidence. All communities, our own nation included, at certain stages of their development are in a condition in which devotion to the immediate superior is a stronger and more compelling force than devotion to the Head of the State. The histories of the feuda! wars in England, France, Japan, Germany, Poland, and Austria, during the Middle Ages, show us that the military forces were then always ready to blindly follow their immediate leader, even though the latter might be acting in opposition to the known wishes and policy of the Head of the State. India is still some hundreds of years back in the Middle Ages in sentiment: and we cannot ignore the danger that we should run both to the internal stability and cohesion of the Empire, as well as its protection from outside aggression, were we to, in any material way, violate the principles which have hitherto so successfully guided our action in regard to the personnel of the officers of the Indian Army.

#### II.

Although convinced of the impossibility of deviating from our policy of retaining the command of the Indian Army, both in peace and war, in British hands, we are nevertheless forced to admit that the position and prospects of Native Officers, except in the Native States, are not of a kind to offer the highest inducements to a man of ability and ambition. To become Rissaldar-Major or Subedar-Major of his regiment before retirement, is the highest limit set to his ambition. The service has lost many of its old attractions. No fighting now occurs in British India: and active service on or beyond the frontiers of India has become more rare and opportunities less. This, inevitable though it may be, has reacted unfavourably upon the Native Officer. Not only has it meant to him a curtailment of opportunities of advancement and distinction, and robbed military life of much that would commend it to a young man of adventurous temperament, but it has also helped to impair the prestige attaching The cause is due to essential characto his position and calling. teristics of human nature. When danger is imminent, protection is naturally valued and esteemed. The more remote the danger is, or appears to be, the less is the appeal to the imagination and We see exactly the same process interest of the means of protection. at work in our own country. During a great war, such as the Peninsular or Boer wars, the calling of the soldier, and more particularly the officer, is surrounded with a glamour and romance which it loses with the rapidly evaporating interest of the general population in all military matters on the conclusion of peace.

> "God and the Sailor we alike adore In time of danger, not before,

The danger passed, the wrong now righted, God is forgotten, and the Sailor slighted."

The above was written a very long time ago, and has furnished a theme for many a writer on the fickleness and ingratitude of I only allude to the matter as forming one item in the list of causes that render the Native Officer less satisfied with his lot, though it is one which it is not in our power to remedy. But it has unquestionably involved a change for the worse in the prospects of the Native Officer, apart from any considerations of a sentimental kind. Formerly, the prominent nature of the services which he was able to render, and the social recognition which resulted, paved the way for the willing bestowal upon him of much that would now be grudged to him as lying quite outside his sphere.

Influential and lucrative positions at court, in Native States, and in the entourage of Commissioners and Governors in British India, might be hoped for: he was not considered debarred by want of legal training from magisterial powers, and not only was he accorded a personal consideration from the local civil authorities. which is rare in these days, but he was sought for amongst his own people, as the honoured guardian of the local temple or shrine, and

could expect to marry his daughters into the best families.

Amongst Native Officers of the best type, the question of "izzat," standing and social and personal recognition, outweighs any more sordid consideration. Those who are of the kind worth most to us can truly say with King Henry V:-

"I am not covetous of gold.

But if it be a sin to covet honour

Then am I the most offendingest soul alive."

We cannot put the Native Officer in the place of the British Officer, for reasons already given: this, in a general way, he understands and acquiesces in. Nor can his pay be raised to a point which would make the military career attractive to him for that consideration alone. But we can give him in more generous measure that which he prizes most, better status and position. I return to this subject later.

Another measure which undoubtedly tends to impair the authority and responsibility of the Native Officer is the gradual increase, during the past twenty or thirty years, in the number of British Officers with regiments. Were it not that so large a number of British Officers would be immediately taken for duties connected with the Staff, Transport, Remounts, etc., on the outbreak of a great war, and also that there is no reserve of British Officers to replace the wastage of a campaign, such a policy would have been indefensible: for with even half a dozen British Officers with a regiment, the scope for the Native Officers to fit themselves for the exercise of responsibility is none too great. If there were no casualties to apprehend, or if there were a reserve of British Officers to draw on by which the number might be always kept up to that figure, I am inclined to think that some six or seven British Officers, one per squadron or double company, and staff, would be an organization which would obtain the very best results. In all our campaigns in India the best work done by Native Officers has been where, working under the general guidance and direction of British Officers, they have yet not been overweighted by so heavy a numerical proportion of British Officers as to swamp their initiative and unduly to curtail the scope of their action. It would be unwise, in my opinion, to leave the Native Officer thus permanently overweighted in peace, and then to suddenly expect him to show, on the British Officers with his unit being suddenly reduced by half in a great war, an initiative and fitness to assume responsibility, which are the outcome of long habit and training. It is an admitted truism that the art of command is an exceedingly difficult one, and not to be lightly undertaken without acquiring the habit by degrees. This point is very strikingly brought out by the late Colonel Henderson in his "Science of War," in the chapters dealing with the great War of Secession in North America. We are there shown how the Southern States, hopelessly inferior in numbers and resources, but officered by men who had acquired in peace the habit of command, were able for long years to defy the gigantic efforts of the Federals to bring them to submission. He shows that, although there were many other factors, such as the superior military genius of General Robert Lee, political interference on the Federal side, etc., one main cause for the want of success of the Northerners was the time which it took for their officers to acquire, by slow and painful degrees, the art of command and the habit of exercising authority. Exactly the same thing was noticed in South Africa: those irregular corps in which discipline was most rapidly and firmly established, and which, on the whole, gave the best account of themselves in the field, were those which had Imperial Officers with them. I know of more than one instance of irregular corps which had to be broken up as useless, whilst others, drawn from practically the same material, and which had been no longer raised, were doing magnificent work under officers who could lead them with the confidence begotten of long habit acquired in peace. A man who has never been allowed to ride, otherwise than guided by a leading rein in the hands of another, will not become a bold and capable horseman by that process, even though the best tuition be given him. One who has never been allowed to swim, except with a bladder under his chin or a life-belt on, will lack the necessary confidence in himself to make a good swimmer, if suddenly thrown into a rough and stormy sea. With most men, the art of exercising effective command in an emergency can only be acquired by having had experience of authority before that emergency takes The paramount necessity of giving Native Officers the individual responsibility of command at certain periods, is my reason for the drastic changes in the training scheme which I advocate later.

The increase in the cost of living, and the enhanced price which now has to be paid for the necessities as well as the luxuries of life, has no doubt made the position of the Native Officer less desirable than before from the financial standpoint. But this is not peculiar to the Native Officer nor indeed confined to the Army, and I doubt whether it is a matter really of first rate importance, especially since the increase of pay dating from January 1st has effected a very substantial improvement.

I have noticed that in certain Native States, where Imperial Service troops are maintained, an effort is made to reserve for Native Military Officers a considerable number of appointments for which they may be fitted on retirement: this is in many cases in lieu of pension, which in many Native States is not given. It is true that in the British Service pensions are given to Native Officers on retirement: but I think that we are too much given to thinking that we have done our whole duty to them in giving them the pension which is a small one, compared with the positions they have held and even with the pay they have drawn in active employment. In Native States they are frequently appointed Munsiff, on the very sensible assumption that integrity, fair-mindedness, and the habit of authority, are of more importance in such a position than any very deep knowledge of legal technicalities: the latter quality can always be supplied by the clerk, provided always that the Munsiff has sufficient character and intelligence not to allow himself to be led by the nose. Positions in the Canals and Revenue, where integrity and administrative ability are the main qualities demanded, are also frequently given; for intelligent and educated natives are usually quick at figures and accounts, and adapt themselves very readily to their new work. The management of estates, public or private, gives another opening. I am of course aware that such appointments, if injudiciously bestowed, are very liable to cause departmental jealousy: and that the Revenue, Canal, or Court of Wards authorities would require to proceed carefully so as not to Still, the practice of giving preferential treatment of cause friction. this kind in Native States is usual, and appears to be taken as a matter of course: and it is probable that, were the sympathies of the civil department really enlisted, quite a considerable number of posts in British India might be found for which good Native Officers might be suitable on retirement. A more markedly preferential treatment might also be accorded to them when new canal colonies are opened, without risk of injustice, or interference with any vested interest. When new canal land is brought under irrigation, it should be an accepted maxim that no outside applicant has as good a claim to consideration as the man who has given the best years of his life to the service of his country. It can make no difference to Government who pays land revenue and canal dues, and it would be well if it were widely known that Government considers that long and loyal service constitutes the strongest of all claims when land is being given out. For many years to come it is likely that fresh land will be constantly brought under cultivation by the extension of the canal colonies in the Punjab and Sind. The number of Native Officers who come

from the Punjab is large; and Government, whilst rewarding faithful service at no cost to itself in a manner peculiarly acceptable, would at the same time ensure that such grants passed into the hands of men bound to it by ties of loyalty, of instinct and tradition, and transmitted by them to their descendants.

Hitherto, the employment of Native Officers after retirement has been prejudiced, and with some show of reason, by the narrowness of their training and by their want of general knowledge and breadth of outlook. A serious attempt has at last been made to remedy this in the provision of a good military vernacular paper, by which they can improve their general knowledge and keep themselves in touch with contemporary events. It is to be hoped that this principle may be extended, so that the Native Officer may not find himself debarred from employment on retirement, through his being more ignorant than his civilian contemporaries. Other things being equal, proved loyalty should confer a strong claim to any employment under Government.

Another form of employment for which preferential treatment might be claimed for Native Military Officers is in cases where Government requires to send a representative, in a political character, either in India or on the borders, and it is not thought essential to send a British Officer. Should Government wish to send a present or a letter of ceremony to a Native Prince, or an Envoy. for example, to Afghanistan, Siam, or Nepal, distinguished Native Officers of honourable record could be found who would carry through their mission with efficiency and dignity. The honour would be very highly prized, and give immense satisfaction. Even in cases where the letter could go equally well with an anna stamp through the post, it might be good policy, provided the travelling expenses were not grudged, to send the letter with a ceremony that might gratify both messenger and recipient. It has often been said, and with very much truth, that our prosaic and unlovely ways of doing even the most beneficent actions rob them of half their value in India. When we see the expediency of doing such acts in a picturesque and graceful way, the Native Officer is the agency which for every reason we should use.

The same remark applies to the conferring of honours or dignities upon retired Native Officers, for civil or municipal services. I remember to have been present on one such occasion where all the officers of the garrison attended in full uniform to do him honour, and the old Native Officer, to his surprise and delight, found that a guard of honour of his old regiment had been sent some hundreds of miles to present arms to him as he came up to receive his insignia. It was the talk of the district, and really good policy from every point of view.

It would probably be found quite impossible to draw up any hard and fast rules for the admission of retired Native Military Officers to Government employment. The most important point is that the sympathy and interest of Civil Officers throughout the

country should be enlisted on their behalf, and that Government should encourage a sympathetic and searching examination of their claims and qualifications by the Civil Officers within whose gift the appointments lie. I am not suggesting that British Military Officers commanding units should be encouraged to importune Civil Officers on behalf of retiring Native Officers who have served under them: on the contrary, I hold that the initiative should come from the other side, and that Civil Officers should be encouraged to fill appointments in their gift by according preferential treatment to Military Officers of education, good position and experience. are probably few regiments which could not supply Native Officers who, on retirement, could fill some of the following posts as well as the average of those usually appointed to them: - Deputy Collector, Munsiff, Honorary Magistrate, Revenue Officer, Registrar, Sub-Registrar, or Zaildar. For the efficient discharge of their duties in the first two positions, I am aware that a high standard of intelligence and education are desirable, as also in the case of the position of Tahsildar and Naib-Tahsildar, which two latter I have not included in the list, as I think that it would be seldom that such appointments could be given to retired Military Officers without prejudice to Native Civil Officials. But to fill the remaining positions on the list, the principal requirements are integrity, administrative ability, and common sense: all qualities which are to be found in Military Native Officers to an at least equal extent with any body of natives in India. In England, in choosing Justices of the Peace or Poor Law Guardians, such qualities are rightly esteemed as being more important than any purely literary or academic qualifications. All men who know anything of India will agree that character is of even greater importance in such positions in India than in England. And it is safe to assert that it can seldom happen that any Civil Officer can have anything like the same intimate personal knowledge of the character of prospective candidates for these positions, as is necessarily possessed by Military Officers who have known their retiring Rissaldar-Major or Subedar-Major for thirty years in peace and war. I cannot myself imagine that any man would fill the highly prized appointment of Zaildar better than a Native Military Officer of a good type. Practically all Native Military Officers at the present day have a good deal of education: but for this position it would be a matter of small importance if the candidate were wholly illiterate, provided that he possessed the qualities which I have already stated, I consider more important, and which can usually be counted on to exist in a marked degree in Native Military Officers.

In practically all Continental Armies, a Military Officer in uniform is accorded certain concessions and privileges when travelling, which are not given to the better paid British Military Officer otherwise than when travelling on duty. Certain concessions, which are much valued, and a source of great satisfaction, are made to all ranks of the Native Army when travelling. It would possibly be

found impracticable to extend these facilities very much in the case of the rank and file without considerable danger of personation. But Native Military Officers are numerically a very small body, and the permission for them always to travel, as British Officers do on "Form E," in the class next higher than the one paid for, would make no appreciable difference to any railway company. This might be safeguarded by means of signed passes, the counterfoils of which might be kept by the Adjutant or Unit Commander who had signed them.

Something should be done to provide better housing and accommodation for Native Officers and their surroundings might be easily made more agreeable. Little or no attempt is made to provide gardens, shrubs, etc., round their quarters, except in certain Native States. It is not so much a question of expense as of initiative. Government could not well be asked to incur much expense with this object, and regimental funds are slender and for the most part unavailable for any but some specific purpose. We manage to make the best of our own surroundings out of sometimes very meagre materials and resources: the Native Officer does not usually know how to set about it, or at any rate does not think of it. But any interest shown in this direction by British Officers would meet with a ready response: the British Officer must show the way. In some regiments, where the Native Officers are all of one class, the provision of some common meeting place or club, well lit and provided with a good fire in winter and iced refreshments in summer, would be probably found quite practicable, with vernacular or illustrated papers, according to the demand. In regiments of class squadrons and companies, such an institution could only be partial in operation, and would require more careful and tentative treatment.

The next suggestion which I have to make would, I think, be more appreciated, and do more to raise the status of the Native Officer, than any of the foregoing: and would cost nothing.

Where discontent is rife amongst natives of India, whatever may be the ostensible reason for it, the real cause of bitterness is in the real or supposed social inferiority to which they are relegated.

It may be that there are some who find that they have racially a political grievance: but these are too few and the feeling engendered is too unconvinced and academic to be really dangerous were it not felt that the Englishman regards the native as his social inferior Anything that we can do to remove any soreness of this kind amongst the Native Officers is well worth doing, even though the concession be of a kind to cause some sacrifice of our own pride of race.

At present, a Native Officer, on leaving active employment, retires into private life with the rank and title which he held when serving: and, under ordinary circumstances, will never be anything but "Pensioned Rissaldar" or "Pensioned Subedar." It is true that he has, whilst commanding his squadron or double company, performed duties precisely analogous to those of a Captain in a British Regiment, and his social standing amongst his own people is,

or should be, very much the same as that of an Army Officer amongst the compatriots of the latter in England. It is also true that for obvious reasons he could not be allowed to use the title of "Captain" whilst actually serving under conditions of subordination to British subaltern officers. But when he retires, this objection no longer holds good. He has certainly earned the right to the title, and the bestowal of it upon him would give him the keenest gratification, more especially if it were regarded as "pakka" and not mere honorary rank. It would be a proof that we will not withhold from him any social recognition which it is in our power to bestow, consistently with the maintenance, during his active service, of the training and leading of the Native Army in British hands: a state of things for which, in the vast majority of cases, he sees the paramount necessity, and which he is too shrewd to wish to disturb.

I have said that the great bulk of the Indian Army should be trained and led by British Officers, if it is to be maintained at the highest level of efficiency of which it is capable: and that this fact is borne out incontrovertibly by the military history of the last two centuries in India But, whilst in no way forgetful of this necessity, I think that it would be good policy on our part to keep some few regiments officered entirely by the very pick of the Native Commissioned ranks. Any loss in comparative efficiency would be more than compensated for in the stimulus given to Native Commissioned ranks throughout India.

Nor do I think the loss in comparative efficiency in such regiments would be very serious: for though it would be quite impossible to adequately replace the British Officers by Native Officers throughout the country, yet the few picked men who would officer two or three such regiments might obviously be of a higher stamp than we could hope to obtain were it desired to find sufficient for the units of the Indian Army, some 200 all told. Nor is it proposed that such corps should be left as completely to be trained by a Native Commandant and Native Officers as is the case where officers are British. The same system which gives such excellent results in the case of the Imperial Service troops of the Native Princes might be used with advantage where the unit, officered entirely by natives of India, was recruited from Government subjects. In the Native States, the assistance of a selected Inspecting Officer, provided always that he is the right man for the job, is welcomed and appreciated, not resented. If the duties of the Inspecting Officer in the system suggested were of precisely the same scope as now prevails in Native States, and not allowed to gradually usurp the legitimate functions of the Native Commandant, I see no reason why in British territory the system should not work as smoothly, and with as much good will and good feeling on both sides, as is now the normal condition in the Imperial Service troops. The Imperial Cadet Corps should be the main, though not, I think, the only source of supply of the Native Officers in such units. Exceptional qualifications and services should confer eligibility from any corps of the Indian Army: and the scale

of pay and pensions would necessarily have to be proportionately higher than for Native Officers in other regiments, in order that the officers of such regiments might have every inducement to become a real corps d'élite.

It is very hard for us to look at the position of the Native Commissioned Officer precisely from his point of view, one reason being that it is obviously an extremely delicate matter to discuss with him frankly. I remember once, in discussing some regimental matter with an old Rissaldar-Major, since deceased,—a man quite fit, in everything except general education, to be entrusted with the command of a regiment,—having alluded to "vour squadron." "No. sahib," he replied, "it is not my squadron, nor my regiment: I am nobody here, and can never become of much account." We do not often hear such sentiments expressed in words; but we can hardly doubt but that some feeling of dissatisfaction with the narrowness of his scope and prospects must often be present in the mind of a capable and ambitious man, who sees that no exertion of his own can remove the hard aud fast barrier upon advancement which is imposed by his racial disqualifications. I have already given what appear to me conclusive reasons why this racial disqualification must continue to a very great extent: but I nevertheless do think that some outlet is increasingly necessary for the best abilities of the Native Commissioned ranks, and that a more ambitious career might be possible for the best amongst them, without detriment to the efficiency of the Native Army as a whole.

The following are also points upon which I know that the Native Officer feels strongly, and in which the desired concession

could be easily made, and would be very highly appreciated.

On all occasions when Native Officers have to attend Kutchery on business, they should, in virtue of their position, be accorded seats as a matter of course, as is always done in the case of Vakils and civil officials of standing. They should not, as now in too many instances occur, be kept standing about like coolies. This privilege should be enjoyed by pensioned Native Officers, as well as by those on the active list.

They should be exempted from "begar" and "impressment" of

animals and vehicles, except in case of urgent necessity.

Boarding houses or hostels for their sons should be provided at a few of the colleges of repute. After all, this concession is one which is already in existence for British Officers, in such institutions as Wellington, etc. It would compensate in some measure for the smallness of the father's pay, to know that some special advantages would be given to his sons.

Representation of Native Officers on Municipal Committees, Managing Committees of schools and other public institutions, would, I am convinced, be as beneficial to the body which they served in this manner, as gratifying to the pensioned officers themselves.

The above are the principal proposals which I have to put forward for the improvement of the position and prospects of the Native Officer, consistently with the essential principles of the maintenance of British direction and influence in the training and leading of the Native Army. Without such influence being thorough and permeating, I am convinced that both the stability of our power in India would be placed upon less secure foundations, and the readiness

and efficiency for war of the Indian Army impaired.

I have already alluded to the necessity which exists of giving the Native Officer a larger degree of initiative and responsibility in peace, if we are to feel sure that he will not disappoint expectation in war, and if he is to continue to be, in fitness to exercise authority, the equal of the grand type of Native Officer who came so much to the front in our earlier wars in India: a type made and trained by the exercise of a large degree of authority and initiative, and who could have been produced by no other means. I have stated that he is in peace overweighted with the fourteen British Officers of his Corps: and I have also expressed my conviction that fourteen is not excessive, when we consider that many of these would be taken for extra regimental duties at the very outset of a big campaign, and that the irreplacable balance would be inevitably reduced further by the wastage of war. The only way out of the impasse is to temporarily get rid of the superfluous British Officers for some considerable portion of the Training Season: they eliminate themselves in the hot weather. I propose a scheme which appears to me to accomplish the double object of giving the British Officer a training of a wider and more practically useful kind than he could obtain by spending all his time at regimental work, and at the same time giving the Native Officer the scope which is so imperatively necessary to prevent his legitimate powers being cramped and stunted. In the Mutiny, the Native Officers of regiments which before the Mutiny had twenty-four British Officers could never be compared with those of the old Irregular Cavalry, where the British Officers were only three.

My proposal amounts to this:—That for a period of not less than two months, during the drill season, all regimental officers other than the Staff, and the four Squadron or Double Company Commanders, should be absolutely struck off all regimental duties—preferably in the station in which they are quartered—to save expense to them and the State, and also to avoid interfering with their comfort, amusements and regimental life: and that during that period the whole training and economy of the regiment should be carried on by the Native Officers, under the supervision of the unit commanders. How this should be done so as to confer the maximum of benefit on the junior British Officers is a point on which I shall have more to say presently: for I hold that no junior officer gains very much by going through the same grind over and over again, and that such a process has a deadening effect on him, and should moreover not be necessary with an intelligent and well educated man, though necessary enough with men of a lower standard of education and intelligence. Incidentally it would greatly help the solution of what I have always considered to be the most difficult and important duty of any

Squadron or Double Company Commander in peace, namely, the selection of officers and men for promotion. So long as his subalterns stand between the unit commander and his unit, and are forced by their position to assume the initiative and responsibility for executing all that emanates from him, so long must the Native Officer be more or less of a cypher, and it is harder than ever for the commander to get a correct idea of the character and capacity of those under him. He cannot see the wood for the trees. If his subalterns are out of the way, and the unit commander is content to confine himself for a while to supervision and observation, he will soon obtain a very much clearer idea of what those under him are worth.

The following are some of the methods which suggest themselves for employing the extra British officers during this period, instead of confining them, during the training season, to one set of routine duties. Incidentally, it may be noted that some of the courses suggested would materially lighten the work of any who aspire to the Staff College, and would also cause the general standard of military education to approximate more nearly to the standards prevailing at that Institution:—

(1) Umpiring at manœuvres: the latter being conducted, in Indian regiments, by Native Officers under the supervision of unit commanders only.—As far as my experience goes, most manœuvres where unreal and impossible situations occur, suffer from the lack of a sufficient number of competent umpires: and, under the system proposed, when carried out for some years, the umpires should become more proficient than now. There are hardly ever sufficient umpires to accompany the smaller units employed, whose work is nevertheless of as important a kind as that of the larger units from which they emanate. Contact squadrons, officers' patrols, scouts, etc., are usually tempted to do the best possible for their own side by showing a heroic disregard for the effects of blank cartridge, and to consequently get into the habit of conducting their work in a manner which would not be possible in war: their work is judged by the results obtained, and there is seldom any one at hand to check such practices. Any officer with experience of war knows that a lamentable amount of "rot" of this description occurs, no matter how ably the operations may have been planned and how stringent the orders may be to attempt only what would be practicable under service conditions. Scouts ride up and count the heads of a party firing at them from under cover and patrols ride gaily through to discover dispositions in rear of the firing line. This difficulty occurs in all armies, and the evil is very specifically alluded to in para. 106 of the German Manœuvre Regulations of 1908, where the necessity is pointed out of having such practices stopped by umpires. That all this should be stopped is indisputable. It is equally certain that it never can be stopped otherwise than by an authority not interested in the success of either side—except in cases where neither side is sufficiently interested in the proceedings to care whether they beat their adversaries: and this again is not an ideal to be aimed at.

(2) Courses, such as riding, transport, gymnastics, pioneer work, etc.—There would be a larger number of officers available for such courses in the training season, were it distinctly understood that they were not wanted for regimental work during some

specified portion of that season.

(3) Attachment to units in England or the Colonies.—The latter would, I think, be a very distinct advantage, should we ever have another "Empire" war to wage, and facilities might be given to officers willing to join approved Colonial Corps for a period. Considerable experience of the Colonial soldier has convinced me that (like "Bill Sloggins") "he's all right when you know him,

but you've got to know him first."

(4) Attachment to some other arm of the service.—We most of us go through our regimental life with far too superficial a knowledge of arms other than our own, in a way which would not be tolerated in so thorough a service as the Navy. Infantry and Cavalry Officers have usually only rather a hazy knowledge of one another's work, and both have only a very perfunctory idea of artillery methods and capabilities. Even where officers are specially attached to another arm for instruction, they seldom, unless unusually keen, pick up much, because it is not the business of anyone in particular to instruct them, and they are shy of becoming a nuisance by perpetually asking for enlightenment from those who are otherwise busy.

Take, for instance, an infantry subaltern attached to a artillery If he wished for any kind of detailed knowledge of the arm. he would want to ask a lot of questions. The theoretical information he could, to a great extent, get from text-books--such as the general organisation of the unit, their system of drafts, remounts, and reserves, and the main principles of their employment with But there are other important points upon which information might be difficult to obtain, and which might be difficult to assimilate unless helped out by expert advice and practical illustration. To what extent is the work decentralised? are your measures on mobilization? What are the transport arrangements on mobilisation? What saddlery and harness is used? Where does it come from? Where is everything carried on service? What guns are these? What are their potentialities and range? What area is swept by the projectiles and what their angle of descent at various ranges? What is the rate of fire, the procedure for laying and observation? How long do you take to come into action under varying conditions? How do you take range and how long does it take? Construction of the gun carriage and recoil The precise nature and scope of the work of Artillery Methods for indirect fire and choice of positions for the Methods of training horses, their feeding, watering and shoeing? Special courses of training within the unit? Formations, and when and why adopted? Ammunition supply? Communications within the unit and with other arms? Camping requirements? Why did you find it easy to shoot yesterday, and find ranging supremely difficult to-day under conditions of range and atmosphere which appear to the uninitiated almost identical? If I were attacking that position; what is the precise nature of the support I could count on from you, under existing conditions of light, atmosphere and terrain?

These are a few questions which occur at random to me, the answer to which officers of the other arms would seldom be unable to give, and on which they have to remain ignorant. Even in the junior ranks, an officer who has a thorough working knowledge of all arms should, other things being equal, be more valuable than one who has not. All our generals and leaders pass through the junior ranks and from the latter come those who will command mixed forces in the future. Under our present system, it is not unusual for the officer, who by virtue of seniority assumes command on service of a mixed force, to have no really adequate understanding of what his artillery can do and the precise value of the support which it can give him under varying conditions: nor is it very unusual to find him, if his force includes cavalry, either handicapping himself seriously by disinclination to make full use of an arm which he does not understand fully and consequently does not trust, or else finding his plans miscarry owing to his having expected them to do what is impossible. Officers of both these types were familiar enough to us in South Africa.

At practice camps, one often sees officers of some other arm who have obtained permission to "attend the camp." The idea of allowing them to do so is an excellent one, if only it were carried to a logical conclusion. Many of them arrive keen enough, until rapidly disillusioned. They find that it is nobody's business to help them or enlighten them, and that every one is busy and has his own work to attend to, and so they have to be content to wander about forlornly in droves, not taking in the meaning of one-tenth part of what is going on, and mainly concerned with keeping out of the way and not being a nuisance.

I have taken my instances from the artillery, because that is the arm concerning which I think officers of other branches are more densely ignorant than any other. But it is true of the remaining arms, even if they do not look upon them as quite such a mystery as the artillery. It is useful for an officer to know all he can about other arms at any stage of his career. I propose accordingly that he should be given opportunities to acquire this knowledge at the earliest moment; and I maintain that, in doing this, he will be better employed than in preventing the Native Officer of his unit from obtaining the practice in handling men which is enjoyed by the British Officers during the rest of the training season, and which is just as essential for the one race as for the other.

But in order to carry out such courses properly it is essential, as already pointed out, that the officers under instruction should have some one told off specially to assist them. This affords an opportunity of getting rid of one of the superfluous officers from the unit

to which they are attached: for, as already stated, I hold that at this particular period all are superfluous except the staff and four unit commanders. The officer so told off should be the senior officer who is not a unit commander, so as to ensure his having sufficient service in his own branch to make him reliable as an informant. Not having a unit of his own to instruct in his own corps, it will not be at all a bad thing for him to undertake for a brief period the task of instructing officers of other arms, the bulk of whom, it may be safely assumed, have little beyond a theoretical acquaintance with his In order to ensure this course of instruction being made the most of, the Instructor should be required to show to his Commanding Officer, for approval and suggestions, the programme of practical instruction proposed. This should include seeing field days out with the units then working under the command of Native Officers, superintended by the unit commanders. In the case of Infantry Officers attached to mounted units, a course of visits to the Horse Hospital, for practical demonstration from the Farrier-Major or Salutri in charge, might be usefully included. If the latter had been in force in the British Service before the Boer War, I do not think we should have lost a couple of hundred thousand horses from what was undoubtedly mainly gross ignorance, even making all allowances for exceptionally exacting work at times: and should have saved incalculably in time, money and prestige.

Certain objections may certainly be urged against this proposal. One which suggests itself at once is that the course proposed may degenerate into a mere "loaf," unless followed by an examination. I am not in favour of multiplying examinations, and I do not think perfunctory examinations are necessarily any very searching tests of practical knowledge. What is more essential is that the Officer Commanding the unit should see the advantages of the process and lend his all-powerful support to ensuring the opportunity being made the most of. The danger is that he may, at first at any rate, be hostile to the whole idea: that he may grumble at his British Officers being taken away, consider that his Native Officers are being taught duties which belong to those set over them, and that the regiment is going to the Devil, and object strongly to the presence of strange officers about his lines. It must be admitted that there is every chance that some Commanding Officers will take that line: but not, I think, the great majority. There has seldom yet been any considerable innovation introduced into the army which has not been received with opposition, active or passive, by the less adaptable and more conservative elements in it: but had that been considered an insuperable obstacle to change, we should be a good deal behind hand by now. If launched into a really big war, and deprived of about half of their British officers at the start-this a matter on which their protests would be unheeded, for the regiment must make sacrifices for the vital necessities of the Army,—commanding officers would find that after all it was a useful process that had trained their Native Officers to efficiently fill the places of junior British

Officers when required, and that the British Officers had also gained immensely in knowledge which would make them far more useful to the army as whole, even if this were not so immediately apparent in purely regimental work. A Commanding Officer sympathetic to the scheme would find it in his power to stimulate, by his encouragement, the interest which the bulk of those under instruction would already be disposed to show in the new work: and once he had made his own attitude in the matter quite clear, he could usually safely trust the instructing officer to impart all the information in his power, without the formula of an examination to annoy those under instruction at the end of the course. If he thought it necessary, he could then in ten minutes find out whether the officer responsible for the instruction had duly fulfilled his responsibilities. Army Headquarters might, if considered advisable, ask him to certify that he had satisfied himself that this was the case.

Even in our little frontier expeditions—to say nothing of a really important campaign -- we constantly see the heaviest and most trying responsibilities thrown upon Native Officers. them are quite capable of rising to the occasion: and I repeat that it should be our care that all are, to the utmost of our power, given The first ten opportunities to fit them for any likely emergency. minutes' fire of the Frontier Campaign of 1897 at Maizar deprived the 1st Sikhs (now the 51st Sikhs) of all their British Officers. Deprived of their leaders, outnumbered by ten to one, and with but 21 cartridges per man, the detachment of this gallant regiment held out for hours, until help arrived from Datta Khel, nine miles away. skill and coolness of the Native Officers alone saved the detachment from sharing the fate of Colonel Bunny and his British Officers. It is indeed worth our while to give the best instruction possible to men of that stamp. A somewhat extreme example, the above, of what a Native Officer may be called on to do. But we have hardly a campaign in which we do not see the same thing occur on a smaller scale. It is hardly necessary to point out that we would increase the interest of the Native Officer in his work, and add to his authority and make him more contented, by giving him work of a more responsible kind during a considerable portion of the training season.

(5) Any junior officer who had already gone through the above courses with other arms, when not required for umpiring or garrison duties,—and the latter class of duties are light enough in these days, being limited to an occasional board or court-martial—might be given facilities for special courses of study, more particularly if going up for promotion or other professional examinations, if not, then the mere fact that an officer was not a candidate for the Staff College need not necessarily prevent the Officer Commanding the Station detailing him to deliver a lecture, before all officers struck off regimental work, on some particular set of operations. His time will be better employed in working up this lecture and making the big maps for it, etc., than in going over old ground in his regimental

work. It would probably be an unpopular duty at first, until officers found that what others can do is not impossible for them too, and that, in giving a lecture, the main point is, following the advice of "Alice in Wonderland" to "take care of the sense and the sounds will take care of themselves." An officer becomes a better instructor of his men by having practice which makes him clearer in explana-

tion, more critical, and generally more articulate.

The field duties to be carried out by the Native Officer, in the absence for a period of the junior British Officers, should avoid being a mere recapitulation, although of course in regimental work we cannot help covering much the same ground. A good deal of thought, experience, and imagination, besides some quarrying in the pits of Military History, and sometimes in the ingenious fiction based on Military History, are necessary to enable the unit commander, acting alone or in collaboration with other units, to give to his field work the interest and variety necessary to get the maximum of value from it. At this period of the training, more than any other, he must beware of the "Sealed Pattern Field Day." One of the weakest points of the average Native Officer is his fondness for having an order and a pattern for every kind of operation, and crystallising everything into a drill. If we keep giving him new problems and new situations every time, tell him to hammer it out his own way, and confine our criticism to pointing out the infringement, where it occurs, of principles, we shall be making the best use of the time. His way of working the detail is not necessarily any worse than ours, even if different.

There is one other matter which has a very considerable bearing upon the position and contentment of the Native Officer. I refer to the nature of his relations and intercourse with his British Officers. Of the latter, some have a natural genius for being able to converse on any subject with their Native Officers. Riding along on the line of march, on field days, in the lines, they find no difficulty in keeping up a flow of cheery talk with them. But other men find the lack of a common basis of interest and mental perceptions; they find it hard to talk to their Native Officers except on matters connected with duties; and consequently, though quite undesignedly, make the Native Officer always feel himself something of an "Outsider" when with them, and a certain indefinable estrangement is the result. I feel sure that this is, in part at any rate, due to the unsatisfactory methods of teaching Hindustani: though of course the fact of one man being naturally more sympathetic and sociable than another will not be altered by any linguistic attainments. An immense amount of time and labour is at present unprofitably expended in passing Hindustani examinations, which do not much assist us when talking or reading, besides being calculated to produce a dislike and contempt for a language in which the only literature we are asked to read is unmitigated rubbish. Any educated native, moreover, will tell us that much of the "Bagh-o-Bahar" is as much Choctaw as Hindustani, and is not even

archaic Hindustani. Whatever there may have once been in the reasons given, that there was no other suitable book, no longer holds good. There is now in existence an excellent Army Newspaper published in the vernacular, with the contents of which it would be far more useful that we should be familiar, than with the contents of the "Bagh-o Bahar." besides the fact that the language is more like that in use by the men themselves, and the vocabulary is that used in treating of the matters in which they are most interested. subject-matter dealt with in the paper is sufficiently comprehensive and varied to ensure that any man who can at sight read any article in it, must have a thoroughly good working knowledge of the language and he will moreover be brought much more in touch with native thought, and more readily able to interchange ideas, if there is the basis of a common source of information. I would most strongly urge that the capacity to read off fluently, at sight, any article on any subject in any number of the vernacular "Army Newspaper" be substituted for the present tests in the "Bagh-o-Bahar." The useless tyranny of this and similar publications has already lasted too long, and we should have to go to the Chinese Civil Service Examinations in useless classics to find a parallel to the system under which we now spend so many laborious months in acquiring a knowledge which is not only of no use, but actually detrimental. Every officer of the Indian Army is aware of how much depends upon the personal relation existing between the British Officers and those under their command. I have accordingly thought it not out of place to allude here to anything which tends to make such relations more easy and agreeable. And the first essential to this is a common vehicle of expression and some ideas in common.

## III.

The reasons usually put forward by those who favour the more extensive granting of direct commissions to Native Officers are principally that it would conduce more to broaden the sources of supply of candidates, by giving a larger class a share in such appointments: that we should be more likely to secure the sons of men of position and influence by that process: that in this way we also ought to obtain young men of more liberal education; and be less likely to call into being a military caste, out of touch with the bulk of the population. I do not suggest that this avenue of supply should be absolutely closed: but the objections to it are so many and weighty, that I am convinced that its application should be very limited, and that the main source of supply should be what it has hitherto been. I admit that we may occasionally lose a man of good position and family who does not care to be passed through the subordinate grades, by adhering to this principle. But we will not lose, in the main, those who are best worth having as officers. And. as already stated, I advocate direct commissions—the only judge of the desirability of which should be the Commanding Officer,—in a

minority of cases. I do not think that the efficiency of the army is best served by prescribing to Commanding Officers the precise proportion that direct commissions should bear to those given through the ranks. One very strong reason against giving a larger number of direct commissions than hitherto is the very large proportion of failures amongst those so promoted, and the consensus of opinion amongst Regimental Officers against an extension of the principle. Amongst those of our own race, we are accustomed to regard any well bred man as not disqualified in any way to hold a commission or fill any other appointment, merely because it has never been the practice of any of his family to take up that line of life. We find the son of the country gentleman, of the lawyer, doctor, or other professional men, usually makes an excellent officer; in some cases better than one who is the son of an officer, if the latter has gone into the army merely because his surroundings have been always military and because from his childhood he has never thought it possible to go into anything else, though not drawn to it by any real liking for it. Amongst Asiatics, however, the hereditary nature of avocations, down to the lowest, is a common-place: and not only is there usually no desire for another walk in life, but there is usually no aptitude for it, even when such desire exists. It may not be a good thing that this is so: but we have to make the best of what actually exists, instead of ignoring the radical differences between East and We cannot maintain that in India the son of the country gentleman unassociated with the army, or of the lawyer or doctor. is potentially just as good an officer as the son of the Native Officer: we know that in India, as a general rule, he is not. If anxious for his son to obtain a commission, and if he is promised that one shall be given if the boy proves himself suitable for it in all respects, the old Native Officer will not usually demur at his son passing through the ranks, as a preliminary. Everyone in the regiment knows who the boy is, and he has all his father's old friends to help and instruct him. On the other hand, he knows that he is on probation and that he has to prove himself worthy of advancement before obtaining it; and has consequently to exert himself to the utmost to master his work at every stage. stand that the same principle is in force in the German Army, with excellent results. Where the system of direct commissions is used. it should as a rule be restricted to sons of Native Officers or others whom the regiment knows about, and where the Commanding Officer consequently feels himself fairly safe in giving a direct commission: for there is no man in India more difficult to get rid of than a Native Officer, if he is unsatisfactory, but not to the extent of laying himself open to trial by court-martial. I look upon that candidate as ideal who is kept straight by family tradition and pride of association with his regiment. In my own corps, in one case the grandfather, a man of high family and hereditary military traditions, served with distinction in the Mutiny, when the corps was raised; he, in his turn, brought his son into the regiment, but did not object

to his serving in a lower grade on probation: the grandson, now an officer, was given a direct commission with the best results, as we all knew him, and with such traditions behind him and his father still in the regiment to guide him, it was felt that his was essentially a case for such treatment. But I would again insist on the proviso that the Commanding Officer, who is responsible for the way in which the candidate turns out, should have absolute power in selecting him, and that no pressure of any kind should be brought to bear on him to take a youth about whom he knows nothing. If a Commanding Officer is directed, as sometimes has happened, to take some youth whom the Deputy Commissioner assures him is of good family and suitable in every respect, such a course practically vests the selection of the candidate in the hands of an outside authority, a course in itself very detrimental to discipline amongst natives of India, who are extraordinarily quick to perceive the weak points of and opportunities offered by any division of authority. Granting that the civil authority honestly believes that his protege is suitable. yet it cannot be granted that he is necessarily in a position to form an opinion of any value on the point. Nor is it fair on the Commanding Officer to make him take "a pig in a poke," especially when he will be responsible for the behaviour of the aforesaid animal and unable, except with the utmost difficulty and after a protracted period, to get rid of him if unsatisfactory, provided that he at first is astute enough to do the minimum amount of work necessary to keep out of trouble. In any case, candidates about whom nothing is known by the Commanding Officer are usually equally strangers to the Native Officers and men of the corps, who have nothing in common with them and do not readily identify themselves with them or regard them as their representatives. From the point of view of policy as well as of efficiency the situation is then a false one. Aliens ourselves, we cannot afford to have another alien between ourselves and our men.

Even amongst ourselves, although we have had to work long and hard to obtain a commission, it is not very unusual to find the young officer on joining his regiment, more or less under the impression that the nightmare of hard and continuous work should now be regarded as passed, and that he is now entitled to take life easily and devote himself to having a good time. For this reason it is necessary that he should know that the power exists in the background, vested in the hands of the Commanding Officer and two next senior officers, to turn him unceremoniously out of the regiment, with no other explanation needed than that they do not consider it likely that he will make a good officer. It is far harder to get rid of an undesirable Native Officer, as most regiments have occasion to know. If it be necessary to give such powers in terrorem in the case of British Officers, who have acquired the habit of work, and been for a long period under strict military discipline before being gazetted to a regiment, it is not surprising that the danger should exist in a far more marked degree in the case of young Asiatics suddenly given a position for which they have not necessarily worked

very much, and who are much more likely than British boys to have never been subjected during their lives to discipline of any effective And we have always to bear in mind that they cannot possibly, once they have joined the regiment, be under anything like the same supervision from the British Officers. Nor are any deficiencies or delinquencies of theirs likely to be brought to notice by the senior Native Officers, except where the latter have some ulterior object in view in getting them into trouble: for one very weak point in the native character is the very loose conception of such respon-It is not their business to make enemies for themselves by bringing matters to notice of which they may be perfectly cognisant, but which are not thrust directly in their way; and in no part of the world is the policy of "letting sleeping dogs lie" carried to a greater extent. It follows from the above that, in the case of Native Officers, we have a far more difficult problem, in the granting of direct commissions, than when dealing with some unknown British Officer joining a corps: and that, unless we know a good deal about him at first hand, we may be quite unaware that we have got a bad bargain until it is too late to get rid of him except after endless delay and vexation. And all the while his presence in the regiment is a source of far-reaching mischief.

Another difficulty lies in the fact that it unfortunately is still the case in India, and likely to continue to be the case for a considerable time to come, and that young men of the best social position, especially amongst the races which furnish us with the best military material, are not those who adapt themselves most readily to acquiring a literary and academic education or who could at present give us any basis of selection by their proficiency in passing competitive examinations. This may be very deplorable: but it is a fact that we have simply to make the best of. We must apply other standards: social standing and inherited military instincts and aptitudes, with character and physique, and general intelligence are what must guide our choice in the main. India is still on the whole a country intensely aristocratic in its tendencies. mind, Indians are wise in attaching due weight to social and hereditary qualities: qualities which, in a very democratic age, it is the fashion to look upon in the West as unimportant, and to regard any consideration for them as evidence of illiberality and narrowness of mind. After all, social stratification is just as much a fact as geological stratification, and we do not get rid of the fact by affecting to ignore it. However that may be, Indians at any rate regard the conceding of high position to the "competition-wallah," merely on the strength of his having obtained a few more marks than his social superior, as unsound and objectionable. As it is they, and not we, who have to serve under Native Officers, we should be wise to give due weight to their feeling in the matter: besides which, there is the fact that, as far as their own race is concerned, they are proved by experience to be right in the main in attaching due weight to social standing and hereditary qualities in their leaders.

Our attitude to the question of direct commissions should then be, I consider, one mainly of non-interference with the discretion of Commandants of Regiments. They may safely be trusted to do all in their power to obtain the most suitable officers; and no one else is likely either to be a better judge of the requirements of a regiment, or more anxious to do the best possible for the regiment, than its Commandant. And the difficulty of obtaining any really adequate knowledge of the capabilities and idiosyncrasies of a prospective candidate for a commission is usually so great, and the effects of a false step so serious, that it will be only in the minority of cases that Commanding Officers will feel it wise to recommend a young native for a commission until some further knowledge of his capabilities and characteristics has been obtained when holding a less responsible position in a subordinate rank. We cannot put him on the same footing in this respect as the British Officer. For the latter, even if none of his regiment are acquainted with him personally, is not really an unknown quantity. There is usually the guarantee of his having received his education at some school or college of standing: his educational qualifications have been tested in every particular: and there is the further test of a year and a half under close supervision and military discipline at Sandhurst or Woolwich: finally, he is under most effective supervision during the three years within which he can be retired if found unsuitable. As a general rule, there is no such guarantee of suitability in the case of the native candidate. The one point in which we may be fairly certain is that anything to his discredit will be carefully concealed until it is too late to take action. And the matter is too important for it to be wise to trust to luck in taking a candidate about whom his British Officers can know usually very little, and about whom they are usually unlikely to obtain much reliable information from any other quarter.

#### Conclusion.

The results of the consideration of the problems to be faced, in deciding the career which we should like to see offered to the Native Officer, may be summarised as follows:—

In the first place, that although we recognise that the sphere of the Native Officer is an exceedingly important one, and that everything feasible should be done to make it attractive to him, and to ensure him, in his retirement, an honoured position, yet we cannot, with due regard to the efficiency of the Indian Army, leave him without British Regimental Officers to supervise the training and interior economy in peace, and to supply the most highly trained leaders in war. Not only does history furnish the most conclusive proof that the British Officer has always been an absolute necessity in the past, in order to get the best results from the native soldier, but we find that the requirements of modern war have called for a higher standard of education, training, and organisation than ever

before, not only in the leaders, but in those for whose training they are responsible. The progress in education of the Native Officer has not been sufficient to keep pace with the higher standard now essential: and we are consequently justified in drawing the conclusion that the assistance of the British Officer is more than ever necessary, if the Indian Army is not to fall behind in preparedness for war. Apart from the question of attainments, we do no injustice in asserting that our long and varied experience of the native character is sufficient to convince us that there are certain essential deficiencies in that character which form a source of weakness to it: and that the best results will consequently be obtained by supplying such deficiencies from British sources. This matter has already been discussed sufficiently in this article to make it unnecessary to labour the point further.

With this reservation, I hold that far more can and should be done for the Native Officer than is done now, to improve his position both whilst serving and subsequently. His surroundings can be improved his career can be made more interesting whilst serving his position and authority increased, and he may be made more valuable as a combatant, by allowing him a larger share than hitherto in the tactical training and management of his men. And if the means taken to compass this desirable end result at the same time in supplying an admitted want in the training of British Officers, and giving them opportunities for the practical study during the drill season of exceedingly important details of their profession, for which opportunity cannot be otherwise found, surely that is another point in favour of the scheme.

Finally, when his allotted time in the army is complete and he has to be retired to make promotion for others, we can do much for him which the conditions of his service made it impossible to do before. He can be then given a rank which implies a full recognition of his services and position. He may be given a preferential claim, with very great benefit to the State, upon many coveted positions of honour and trust. If carefully selected with due regard to character and ability, he will in many cases be able to acquit himself with credit as a Member of a Council of Regency, or as a Manager, in Native States; in the Courts of Wards; as a Member of Council in Provincial Governments; as a Member of District Boards, or of Municipal Committees; as an Honorary Magistrate; as an Inspector in the Salt Department; as Registrar, Sub-Registrar, or Munsiff; as Zaildar; as Cantonment Kotwal. He should be more generally granted the honour of being made a "Safed Posh," and given a chair as a matter of right where the courtesv is accorded to natives of position or Vakils. Whenever it occurs that any decoration or other marked recognition is conferred upon him on retirement, a graceful tribute to his former military services should be paid by the attendance of British Military Officers in uniform, and, where the occasion is of sufficient importance and the recipient of the honour of sufficient standing, by the presence of &

band or Military Guard of Honour. And, should Government at any future time decide to form Volunteers from amongst retired soldiers, in any emergency, his claims to serve as an officer in such a body should be the first to be considered.

With a view to keeping up the high standard of loyalty and conduct which is the mark of the Native Officer, as much as for any other reason, we must be careful that commissions are only given to those who are in every way worthy of them. This, I think, cannot be ensured except by giving direct commission only to those about whom we know enough to make us feel confident that they will be an honour to their position. Direct commissions "on probation" are too likely to create soreness by the implied stigma if the probationer is finally rejected.

Few, if any, natives of India give us, as a body, more loyal and whole-hearted service than our Native Officers, or can be regarded as more favourable types of the races from which they spring. Their own self-respect, and the habits of discipline of a lifetime, prevent them from clamouring and intriguing for position or recognition which would be equally gratifying to them, honourable to us, and advantageous to the State. To their British rulers, it should be a duty and a pleasure to see that they do not suffer from silent acquiescence in the obscurity to which even the best of them are too often relegated on retirement: a state of things which, I am convinced, is not due to any deliberate policy on the part of Government, but to the too usual fate meted out in this world to those who are "out of sight, out of mind."

# THE FRENCH IN INDIA.

# Lecture given in French by Monsieur J. Muller-Desroches, Professor of Languages, at Simla.

MAJOR-GENL. BERESFORD-LOVETT, C.B., C.S.I., in the Chair.

LADIES AND GENTLEMEN,—I have been told that it was very pretentious on my part to wish to give a lecture in French before a public which, if well acquainted with the subject, may be perhaps not so intimate with the language.

But however I did not hesitate for an instant, because always, and especially during my travels, I have noticed how the French language is the one preferably used, not only by all nations but also

by every educated and well-bred person.

The members and the Committee of the United Service Institute have so well understood and foreseen what would be appreciated by Simla society, that they also did not hesitate to allow my lecture to figure in their annual programme, and have thus accorded me their kind patronage for which I wish, before I begin, to tender

them my most sincere thanks.

I have chosen for the subject of my lecture a page of history, both glorious and sad, about our Colonial heroes in India. I would not be able to give you in a short time and in detail, all the historical events which took place during more than a century in a country nearly as large as Europe, and in the midst of the most various races of mankind and of millions of people. Whole books have been written on the subject, and it would be absurd of me to wish to pretend to tell you more about it than historians and savants who worked for years, and perhaps during their whole lives, in order to enlighten us about these remote times.

Therefore, I shall content myself by giving you a glance into the works and passage of the French in India, and I shall consider myself sufficiently rewarded if during this short conference I can interest my audience by bringing into life those intrepid men of ours, those primitive pioneers, those soldiers of "race" who have carried the French as well as the English flag on the soil which we now tread so peacefully, and where so much generous blood has been

spilt and has caused the tears of mothers at home.

Now let history speak; the historical events, although they may appear rather monotonous, are after all more eloquent than all our personal opinions; and the best praise we can give to our heroes is still to relate their histories.

No country in the world has been the scene of more terrible battles, the hot-bed of more destructive revolutions, the object of more eager desire than the large and rich peninsula of India.

Before they submitted to the yoke of the rule under which they live at present, these most diverse races ran foul of and repelled one another; they are still side by side, though they are not mixed up; numerous conquerors, Turanians, Aryans, Musalmans, Moghuls, Europeans, have passed and put down one another. We need not speak here of the dreadful fights which occupy the ancient need we mention the cruel struggles between the epoch; nor Musalman and Moghul sovereigns and their Hindu subjects, nor the unfortunate civil wars which brought about the downfall of the Moghul Empire and brought into historical prominence the European invaders, whose vassals the pompous Emperors were to become.

The Portuguese were the first to set up, on the coast of India, Vasco de Gama landed at Calicut in 1497. durable factories. Alvares Cabrol forced the princes of Malabar to enter into treaties with him; Albuquerque made Goa the head-quarters of Portuguese power in the Indian seas. In 1530, the power of Portugal prevailed

from Ormuz to Ceylon

These successes excited the envy of other commercial nations; in 1503, already some merchants of Rouen endeavoured to send a ship to the Indian seas, which was, however, wrecked off the Cape

of Good Hope.

In the meanwhile, the English were looking for a route by the north-west so as to reach India. In 1577-78, Francis Drake disembarked at the Dutch Archipelago, later on Thomas Cavendish took the same route and captured several Portuguese ships laden with Indian products. This prize inflamed the imagination of the English, and in 1599 an association was formed in London to carry on a traffic with the East; this association received a Charter and certain privileges from Queen Elizabeth and was called "The Company of the Merchants of London making traffic with Oriental India." This Company, during 15 years, was satisfied with trading only. In 1613, Thomas Best, and little later on, Thomas Roc, were sent by the King, Jacques I, to the great Moghul king and were granted by him important privileges. The company became prosperous, but its development was somewhat hindered by foreign rivals. Of course the Dutch, and their clever leading merchant, Peter Hotman, were anxious to get their own part from the Indian cake, and in fact they succeeded in establishing themselves on Indian soil. Then began between English, Portuguese and Dutch endless quarrels.

It is only towards the 17th century that France entered into these events. Colbert, jealous of the rivals' success, founded, on the auspices of the King, an Indian Company which he endowed richly. However, his first expedition completely failed. At last in 1666 Francois Caron, born in Holland from French parents, sailed to India. He landed at Cochin and established the first factory at Surat. Then another one at Masulipatam. Caron, as a wary man, took with him a Persian named Mercara who knew the country and the language and, consequently, was able to

facilitate his relations with natives. But jealousy and discord separated them before Caron attained any success. After the failure of the Admiral La Haye, who was sent with a fleet to India in order to take away from the Dutch the isle of Ceylon, Caron himself had to return to France. The occupation of St. Thome was the only result of the expedition. In spite of this little success, the Dutch became very excited, and fearing to see French enterprises taking root and spreading out its branches, they advised the Raja of Golconda to expel these insolent and greedy foreigners, for his honour and for his own security. The Raja joined the Dutch fleet with his forces. France had to capitulate at St. Thome, and leave the place with the honour of arms. One of Caron's lieutenants. meanwhile, retired to the north of the river Calerun, which concession had previously been acquired by the company. He was to become the new Governor of French India after Caron's departure. Martin was not unknown; having distinguished himself during the expedition of La Haye, his energy and cleverness were recognised by all the world; it was he who established the factory at Pondicherry and transformed the Hindu village into a European town; the port was sheltered against the monsoon, the climate was commodious. salubrious; the company provisioned the store-houses and Martin obtained from his friend, the Native Chief, the authority to maintain 300 native soldiers for the defence of the town; then it was that Pondicherry saw the commencement of prosperity which was destined to be almost stopped and annihilated by the redoubtable Sivadji, Chief of the Maharatta mountaineers. If Martin succeeded in . calming the Indian Chief and in awakening in him the most peaceful sentiments, he was not equally successful with the Dutch who had just arrived with a fleet in front of Pondicherry and forced the town to capitulate. The French Colony seemed lost for ever, but among the Indians the remembrance of the French seemed to have taken root. If Pondicherry had fallen for the moment into the hands of a strange power, there always remained to us Surat, Masulipatam, Balasore, and an edict of Aurangzeb had just ceded to Martin the village of Chandernagore. A little while later, the treaty of Ryswick gave us Pondicherry. It was again Martin's job to have the honour of commanding the place, to the fortifying and provisioning of which he at once applied himself.

In a little while the small borough became so important that the company decided to transfer there the superior counsel of

India, which was at that moment at Surat.

Thanks to Martin, the French enjoyed in those days a great reputation at the Courts of the various native princes; they were careful in the country to pay the utmost deference to the wishes of the prince with whom they were brought in contact, and to attempt to gain his confidence by a recognition of his power and authority, their policy in fact was to adapt themselves as much as possible to native habits whilst not departing from strict principles.



Though it was left to the successors of Martin to atone for that blot, yet he brought his relations with the natives to such a point that he and his French were not only trusted but personally esteemed and regarded. In this way he laid the foundation for that intimate connection with native powers which the most illustrious of his successors used with such effect to build up a French

Empire in India.

When Martin died in 1706, poor and honoured, he left a flourishing town, peopled by 40,000 inhabitants, dowered with wise regulations and capable of supplanting rival establishments. Thanks to him, the French had in the eyes of the natives a reputation for bravery, of straightforwardness, and of good faith, which inspired the sympathy of native princes and the confidence of the Hindus. Unhappily, the French company of India was badly directed and was at the point of failing and the finances were exhausted; there was nothing now left them but expedients.

This state of things was naturally felt in the Colony. The immediate successors of Martin, who were almost helpless, did

nothing but prolong the existence of the colony.

Hebert, Dulivier, Le Noir and Beauvallier de Courchant were honest merchants, eager to arrange affairs; they were forced to do their best without always being gratified by important results. The colony vegetated, and the era of prosperity started anew under the Government of B. Dumas (formerly Governor of the Islands of France and Bourbon) alone.

"The new Governor," said Colonel Malleson, "was a shrewd, calculating, prudent man—one not given to risk much without having in view a very tangible result; brave, resolute, jealous of the honour of France, thoroughly acquainted with native ways, holding fast by the tradition of Francois Martin, a lover of peace, and anxious, above all, to extend the French territories in India by smooth means."

The cleverness of Dumas brought into the country the politics of France in a new way. Every one knows that after the death of Aurangzeb and of his son, India was the prey of the fury of civil

wars, and of the rapacity of invaders.

The Grand Moghul was disputing for his capital and his throne against his brothers and his lieutenants, against the sovereigns of Persia, against bands of Afghans, against rebellious tribes of Sikhs; the Governors of the provinces and other functionaries emancipated themselves one after the other; the division of castes, the difference of religions hastened the dissolution of the Empire. At the moment when the Brahmins and Musalmans were fighting each other, the English and French were taking the Carnatic and Bengal.

The Nawab of the Carnatic, Dost Ali, allied himself with the French, and accorded to Dumas the permission to coin money which

became the source of an extremely lucrative commerce.

He also got from the Raja of Tanjore the concession of a town and the district of Karikal (1739).

All these distinctions, privileges and acquisitions could not but augment the prestige of the French and give them a really important voice in the politics of the country. These seeds of influence, however, did a certain amount of harm to the colony, in that it created numerous and terrible enemies, among the latter were the Maharatta bandits who descended upon the territory of Dost Ali, and defeated the army of this unfortunate prince, who was himself killed in the battle; his wife and children sought refuge with Dumas who did not

hesitate to accord them his protection.

The chief of the bandits called upon Dumas to deliver up Chanda Sahib's wife and children, but Dumas curtly refused saying that he could not abandon the unfortunates who had sought refuge under the French flag. The chief then sent an officer to Dumas but he was not successful either. Dumas had him shown round the garrison of Pondicherry which was in complete readiness for defence, and begged him to tell his master that the French had neither gold nor silver mines but that they were rich in iron, and knew well how to make use of it against their enemies. When he was dismissing the officer who was greatly struck by the declarations of the French, Dumas made him a present of 10 bottles of a "Naucy liquor," which was greatly appreciated by the general and still more by his The latter was so pleased with the beverage that she insisted upon getting more, at any price; and, unable to hold out against the wishes of his better half, Rhagogi forgot his ultimatum and entered upon a conference with Dumas. Peace was made, thanks to 30 more bottles of the famous cordial. Treaties are sometimes sealed and watered by a champagne dinner, but seldom has a treaty been brought about at so little cost. Pondicherry was saved, if I may so express it, by the French vine dresser and their wary agent Dumas.

The Indian princes now regarded the clever Governor as a hero and showered presents, honours and congratulations upon him.

The Nawab of the Deccans offered him a coat of honour, and Dost Ali's son offered him his father's robe which was covered with gold and precious stones, and also elephants, horses and magnificent weapons; the Emperor of Delhi offered him the rank and title of Nawab and the command of 4,500 men, of which 2,000 were to form his guard of honour in times of peace, and which were to be kept up at the Empire's expense. Dumas asked that the title of Nawab and the command might be made transmissible to his successors, and his request was granted. All the petty neighbouring princes also granted advantageous treaties which augmented our revenues and our territories.

Such were the brilliant results of Benoit Dumas' firm, just and intelligent administration. A few months after these triumphs this great man asked that he might be allowed to return to France. He left behind him for his successor—assured possessions, devoted subjects, faithful allies, a clearly mapped out policy and faithful examples. This successor was Dupleix.

Dupleix was the son of a general farmer Agent to the Company in India where he was to remain for 30 years. Thanks to his father's influence, he had already been Governor of Chandanagore, where he had set himself to work to strengthen the intercourse and commerce with the towns of the interior. He converted this neglected spot into a busy town of which he himself was the ship-builder, salesman and banker all in one; he was everywhere and superintended everything; 40 ships—and soon there were 72—imported and exported the merchandise. Dupleix and his friends reaped enormous fortunes, but the growing fortunes of the colony also added to the fame of its intendant and, as a reward, he was allowed to succeed Dumas.

Dupleix had just married the widow of Mr. Vincent, a Councillor of the Indian Company. This lady, the daughter of a Frenchman and of a Portuguese lady of the de Castro family, had been born in India, and had a thorough knowledge of the various dialects of the country and of the customs and prejudices of the Hindus, she was also cultured and beautiful and was the devoted assistant and inspirator of all her husband's schemes, she shared alike his good and his bad fortunes.

Dupleix retained the title of Nawab which the Grand Moghul had conferred upon Dumas, and insisted upon all the honours attached to this title being paid him. He established an etiquette and lived in such luxury that he excited the ridicule of Europeans, and the respect and admiration of the natives. Dupleix knew well enough the necessity of dazzling oriental imagination in order to have any control over the natives.

Meanwhile the War of the Spanish Succession had been going on in Europe. At first, this war was the means of Dupleix furthering his own advantages at the expense of the English. France, which at first had been deaf to all appeals from her Governor, now sent him out a squadron under the command of Mahe de la Bourdonnais, renowned for his bravery, and who had already, in 1725, taken possession of the town of Mahe, which was therefore named after him.

Dupleix despatched him at once against Madras. Here Dupleix's scheme becomes plain. He saw in Madras a means of support for his schemes of aggrandisement and of future interference. The town fell and surrendered without conditions.

The jealousy and misunderstandings between Dupleix and the Admiral, who would not acknowledge any authority, resulted in the failure of Dupleix's plans. A storm which descended upon and annihilated the squadron, threatened to have an equally disastrous effect upon the future of the colony. It proved, at all events, to be the misfortune and to result in the disgrace of La Bourdonnais, who had to return to France where, like other unlucky generals, he was tried and dishonoured.

Meanwhile in Pondicherry Dupleix, in the midst of the most terrible dangers, managed with only a handful of soldiers to save the town, and to hold Madras till the impolitic treaty of Aix La Chapelle forced him, to his great anger, to give it up. He then tried to make up for his loss in another way.

Acting upon this idea Dupleix gained in the revolutions of the country, in the hope, or rather with the fixed intention, of ruling

over the division like the ancient Romans had done.

He appointed a Viceroy to the Deccan and a Nawab to the Carnatic. The new Nizam paid a visit to his ally there and the ceremony of installation was celebrated with great pomp. Dupleix, attired in the garb of a Musalman of the highest rank was carried in the same palanquin as the Nawab and in the solemnities that followed took precedence of all the nobles of the court. He was proclaimed Governor of all the land situated between the Krishna river and Cape Comorin, a territory almost as large as France. A large share of the treasure, accumulated by the ancient Viceroys of the Deccan, passed into his coffers. He governed more than 30 millions of people with almost supreme authority. His companions boasted that even in the palace at Delhi his name was never mentioned without a shudder of terror—(Macaulay).

Dupleix had now reached the zenith of his fame. His colonial policy, which was to exercise an arbitrary suzerainty over India and to govern by means of and under the names of the Indian princes,

had proved a great success.

Unfortunately this success was as short-lived as it was brilliant, and the years of trouble were about to commence. A difference of opinion on the subject of the remission of the town of Pondicherry by Mahomet Ali resulted in the latter asking for help from the English. Among the officers of the troops sent by them was the famous Lord Clive who was to fill the breach in the work of the French which the mother country had abandoned.

In the great struggle which followed, Dupleix displayed more energy and was more vigilant than ever. He could not prevent the surrender of his Lieutenant Law at Trichinopoly and his best Lieutenant, Bussy, found it hard to hold out in the Deccan. No help reached him from France. A ship commanded by La Touche and called *The Prince* was lost at sea. The English under the command of Lawrence and Dallan prevented the re-taking of

Trichinopoly. At last Dupleix, in order to gain time, was forced to open a peace conference at Sudras, but before anything could come of this, he was recalled to France by the French Government in accordance with the wishes of the British Cabinet (1754).

Dupleix wept on leaving the peninsula of India where, for more than 30 years, he had worked hard to render the name of France

important.

The great man's return to France, the way in which he was treated after his departure from India, and during the last years of his life, his misery and death, are all subjects too sad and too well known to need re-telling. I will only quote the following passage from a letter of his in his last reply to the process taken against the company:—

"I have sacrificed," says he, "my youth, my fortune, my life in Asia, in order to enrich my country. Unfortunately friends and relatives devoted their possessions to the success of my projects and they are now living in misery and in want. I have submitted to all the judicial forms, and demanded like the meanest of creditors what is my due. My services are looked upon as a myth, and I am treated as the vilest of human beings. I am living in the most deplorable poverty, the little property which remained to me has just been seized and I have been obliged to ask for a sentence of delay to avoid being taken to prison."

In this manner was the master, the conqueror of India, treated by his country, while his more fortunate adversaries, the other side

of the Channel, were covered with favours and honours.

Dupleix was a man who combined in himself all the extraordinary qualities necessary to an administrator, diplomatist and statesman. A man of incorruptible honesty, and of an disinterestedness and unfailing loyalty, whom success could not spoil and defeat could not crush.

Calm and intrepid on the field of battle, he lacked perhaps one of the qualities necessary to fully accomplish his work, that of a great captain of an army. It was on the lines of Dupleix's magnificient organisation that Clive, his most valorous adversary and several of his successors, founded their work in India.

The English company profited greatly by the departure of Dupleix, and continued to work upon the policy he had inaugurated. After the shameful and disastrous treaty of Godeheu, which seems to have been made on purpose to undo all the good which Dupleix had done, the Marquis of Bussey alone managed to keep the French influence to a certain extent.

But once again was the French standard to be raised to lead the French and their allies to battle, but this was the final struggle the last flutter of the bird wounded unto death.

The state of the colony, its troubled circumstances, might have been set right if only they had given the government into the hands of Bussey. The Court at Versailles, however, chose to appoint the Irishman Lally Tollendal, a wise, intrepid, honest general but of an irascible nature and who had sworn a deadly hatred for the English

and wished to turn them out of India altogether. Hardly had he disembarked at Pondicherry, when he took Cuddalore and Fort St. Davis and then besieged Madras. Notwithstanding the most heroic efforts, he could not take the place and was forced to retire upon the arrival of the English fleet. Meanwhile the Deccan had been lost to France because Bussey had been summoned by Lally, and his Lieutenant Conflaus had been beaten by the English, Colonel Forde. All the French soldiers in the army of Salabat Soubab of the Deccan had to leave the province, and the Soubab himself made a treaty in which he promised never to allow any French soldier within his dominions—a cool and systematic destruction of the French influence over the natives.

Lally, who had so far been successful, soon found he had numerous difficulties in his way. He got but little help from the fleet which was commanded by d'Ache, a very easy-going incapable officer, and he also had a corrupted and badly managed administration to contend against. He found he had worse enemies in Pondicherry than anywhere. Besides this, his haughty manner and his temper alienated the people from him, and made it impossible to

get reinforcements.

He could not even save Pondicherry, which was besieged by the English for ten months and, notwithstanding the prodigies of valour which were performed, he had to surrender the town which was then destroyed. This unlucky, though courageous, defender of our colonies was then accused in France of treason. He was a prisoner of the English but demanded to be allowed to justify himself and was most unjustly sentenced to be executed. While he was being conveyed to the scaffold his mouth was gagged to prevent his protesting his innocence.

Three years after this legalised murder, Louis, the well beloved (of ladies), signed the Treaty of Paris in which we renounced all

claim to India.

During some time we do not hear much of the French and still less of their exploits. After the defeat of Lally, after the dispersion of the army, a large number of French officers engaged themselves in the army of the English company, with the categorical restriction that they should never have to fight against France or against French troops.

Many of them have left a name in the history of conquest; such as Major-General Claude Martin, about whom Mr. Hill has

written a very interesting little volume.

Others, more adventurous, took refuge in the courts of native princes, whom they helped with their experience in the organisation of their armies\*. Among these were De Boigne and Perron, who organised the armies of Rao Scindia and Shah Allum.

Perron, as General Beresford Lovett has told us, also organised the country from Bikanir to Aligarh, from Saharanpur to Gwalior,

<sup>\*</sup> See note extract of Major-General Beresford-Lovett.



which they also called the "French State" and of which the administration had been so wonderful that it was kept entirely by the Government of Lord Wellesley after the conquest of the country. It is at the court of Tippoo Sahib more than at any other, that we meet Frenchmen. Tippoo had even proposed to Louis XVI that they should renew the alliance. Poor Louis XVI had many other cares and had to refuse these tantalising offers, and Tippoo, alone, made war against the English.

Defeated by Lord Cornwallis, he was made to deliver half his territory as well as an indemnity of 70 millions and his two sons as

hostages.

These conditions increased Tippoo's hate for the English; wishing to enfeeble these latter by getting them to quarrel with other nations, Tippoo again turned his eyes towards France. Ripault, a clockmaker, who was his Secretary, entertained him with the events of the French revolution, and promised him the help of the Republic. The agitations and tricks of this adventurer, who was trying to find allies, the withdrawing of the Maharattas from their alliance with the English, the approach of the Nizam to the French, made the situation very grave for England.

In Europe the peace of Campo-Formio left great military forces in the hands of the Directory; Bonaparte tried to re-conquer Egypt; he wrote to the Chief of Mecca and prayed him to transmit to his friend, Tippoo Sahib, a letter where he announced to him his desire to set him free from the iron yoke of England, and invited him to send to Suez or Cairo an intelligent person in whom Tippoo Sahib reposed his confidence, and whom he (Bonaparte) could keep

with him (or talk with him).

Lord Wellesley then acted with cleverness and vigour. He obtained from the Nizam the expulsion of the French from his capital. It was the final blow; Napoleon, who with his genius had left the importance of getting back France's lost influence in the Orient, saw his prospects reduced to nothing by the death of Tippo Sahib, who was killed at the taking of his capital by the English.

Thus was the land, and the material supremacy of it, lost to France. The question often arises as to how the Government could have been so improvident, to say the least of it, as to consent to renounce by a stroke of the pen a country so vast and so full of promise. First of all we must remember that, at the time, Louis XIV, the most effeminate of our degenerated kings, was responsible for the loss of much valuable territory, not only in India but in other parts of our colonial empire. He was far too much occupied in showering gifts upon his beloved mistresses and in making coffee for la Dubarry, to trouble himself about the moral and political interests of his kingdom or his people. Besides this, all the court intrigues and jealousies invariably brought about the ruin of any who by their talents, genius, success in warfare or in any undertaking, rose to distinction. Finally, the French company did not in the least understand the plans of Dumas, Martin or Dupleix. It wanted

commerce, not kingdoms, forgetting that through the possession of these kingdoms an immense commerce could eventually be established. The company asked for dividends, not victories, forgetting that defeat would mean the ruin of all hopes of dividends.

And that is why we have to chronicle such sad pages in our history, showing how the mother country abandoned her colonial children in their extreme infancy. She handed down the flag in places where the blood of heroes, known and unknown, was so lavishly spent, and after having worked there so hard and sown the seeds of so many ingenious plans, she left the harvest for strangers to reap.

Yes, the empire of India which Dupleix had dreamt of, and of which France had been pleased to play queen for a short time before returning to her grand suppers and light loves was now lost.

But is the other empire, that of moral influence, lost to us in India even now, one can hardly allow that it is. Any one who has travelled much in India, and among my audience there must be many who know the country far better than I do, who have only been here a few months, will tell you of the numerous traces and mementos of the French that are to be found in this land so rich in souvenirs. They will tell you of the countless tombs and monuments which recall to our minds their triumphs of the past, and in the illustrious names borne by several English families whose ancestors perhaps fought under Dupleix, and in some of the native families in which the blood of Bourbon princes flows, we find the echo of their colonisation.

To the traveller upon the East coast the old French days seem to live again, when he is accosted in French by the simple native boatman.

Many English people love to visit our little towns of Pondicherry and Chandernagore because they remind them of home. Did not Pierre Loti, when he saw the old town of Pondicherry, imagine that he was back in his natal town. Its straight little streets, low houses and with the names of the streets graven on the stones at the corner remind one of our old French towns. These same travellers will tell you that the French influence is even to be found in our methods of Government which are based upon those of Dupleix. English loyalty has acknowledged this without shame, and Colonel Malleson in his great and expert work "The French in India" did not hesitate to ratify the judgment of a French historian, Raymond, by quoting the following:—

"England has been much admired and often cited for having solved that great problem of how to govern, at a distance of 4,000 leagues, with some hundreds of civil functionaries and some thousands of soldiers, her immense possessions in India. If there is much that is wonderful, much that is bold and daring, much political idea, it must be admitted that the honour of inaugurating it belonged to Dupleix, and that England, which is reaping the profit and the glory, has had



but to follow the path which the genius of France opened out to her."

Yes, the genius of France has also played his part in the construction of the immense Indian Empire of to-day, which forms the most precious jewel in the Imperial crown of England. We ought, without any distinction of nationality, to admire these great workers, these pioneers, these propagators of civilisation, who have accomplished colossal works, in the midst of a population whose vital stamina, in spite of what people may say, is far from being exhausted.

And when we consider, to-day, the works of the "Rulers of India" it is not merely an ephemeral feeling of enthusiasm which seizes us, but it is, for the English, a deep gratitude to the builders of their empire; it is for us French, a quite justifiable pride to see men of genius of our own race and blood forming an intimate part of the history of this country.

### Notes.

Answer of Benoit Dumas to the Rhaghogee.

Vous me dites que nous devons depuis quarante ans un tribut a votre roi. La nation française n'a jamais été soumise à aucun tribut : il m'en coûterait la tête, si le roi de France mon maître était informé que j'eusse consenti à payer un tribut à qui que ce soit.....vous m'avez écrit de livrer à vos cavaliers la femme de Chundah-Sahib, son fils et les richesses qu'elle a apportées ici. Vous qui êtes nobles, généreux, plein de bravoure, que penseriez-vous de moi si j'étais capable d'une pareille bassesse? La femme de Chundah-Sahib est dans Pondicherry sous la protection du roi de France, mon maître, et tous les français qui sont dans l'Inde mourraient plutôt que de vous la livrer. Vous me menacez, que, si je ne cède pas à vos demandes, vous amenerez vous-même vos armées ici. Je me prépare de toutes mes forces à vous bien recevoir, à bien mériter votre estime en vous montrant que j'ai l'honneur de commander à la nation la plus brave du monde, qui sait se défendre avec intrépidité contre ceux qui l'attaquent injustement.

Notes on Lally-Tollendal (A. Rambaud, Revue Blene 8 juin 1889.)

Dans cet Hindoustan qui semblait un musée d'objets précieux et fragiles, où Dupleix et sa femme avaient pu tout ménager, ne touchant à rien qu'avec des mains adroites et agiles de prestidigitateurs, l'irlandais Lally semblait un taureau lâché, que d'invisibles perfidies rendaient furieux et qui donnait de la corne et du sabot au hasard. La casse fut énorme.

Extract from M. Tibulle Hamont's "La fin d'un empire français aux Indes sous Louis XV."

Lally était entré à la Bastille le 5 novembre 1762; la procédure commencée en juillet 1763 dura trois ans. La grande Chambre du

parlement fut chargée du procés; le président Maupeou la présidait, le magistrat chargé de l'instruction était Pasquier. Il montra une partialité cynique, Lally sollicita en vain un avocat; trois fois on le lui refusa. On ne lui laissa pas les moyens de préparer sa défense; on ne voulut pas lire les pièces qui démontraient son innocence ni entendre les témoins qui parlaient en faveur de l'accusé. M. Tibulle Hamont a retrouvé aux Archives Nationales les traces irrécusables de ces infamies judiciaires. Le P. Lavaur avait rédigé deux journaux; l'un officiel, où Lally était comblé de louanges; l'autre, secret, où il était accusé de tous les crimes. C'est ce mémoire qui servit de base au rapport de Pasquier. Ce magistrat accueillait tous les mensonges, tous les faux témoignages contre Lally. Son ignorance touchait au grotesque; il demandait compte à Lally de 10,000 cipayes et d'un wakil qu'il s'était approprié; prenant cipayes et wakil (ambassadeur hindou) pour des valeurs monétaires. Quand Lally se vit condamné, le vieux soldat déshonoré protesta avec indignation, et s'enfonca un compas dans la poitrine; dans la crainte qu'il ne mourût de sa blessure les juges firent avancer de six heures l'exécution. Dans sa prison, un geôlier le terrassa et lui vola sa montre ; on le mena à la place de Grève sur la charrette des assassins; on le garrota et on le baîllonna avant de le livrer au bourreau. Douze ans après le fils de Lally, avec l'appui de Voltaire, obtint de Louis XVI la révision de ce procès abominable.

Extract from Major-General Beresford-Lovett's Lecture "When and why did we first take Delhi?"

Since 1783, French influence had been gradually increasing in Hindustan Proper.......The French, owing to the organising genius of de Boigne, obtained a marked ascendency in the armies of Scindia. De Boigne took service with Mahaji Rao Scindia (the father of Dowlat Rao Scindia). Under the former Chief he raised a splendid body of infantry and artillery, that originally numbering but two battalions in 1783 was increased to no less than 58 battalions in 1803, together with over 400 guns. De Boigne obtained from Scindia the cess of the Doab between the Ganges and the Jumna. His administration of these districts was so admirably organised that, when our rule was introduced in these districts in the autumn of 1803, our civil officers found the system, founded by de Boigne, worked so well that it has formed the basis of our revenue and civil administration to the present time. De Boigne left India in 1797 with a fortune of forty lakhs of rupees.

But on Perron devolved the supreme command in succession to de Boigne......Perron held sway over what is officially called the "French State" extending from Bikanir to Aligarh and from Saharanpur to Gwalior and collected a revenue of over two millions

sterling.

Marquis of Wellesley describes the purpose of the treaty of Bassein thus: "It is the principal object of the treaty of Bassein to



prevent the sovereign power of the Mahratta States or the power of any great branch of the Mahratta Empire from passing into the hands of the French."

Maj.-Genl. Beresford-Lovett.—I am glad to express my high appreciation of the excellent lecture we have had the pleasure of listening to this afternoon. I think, indeed I believe, that the entire audience is delighted with the happy chance that led them to attend this interesting lecture, so full of facts that connect the past with the present and which are so intimately connected with our present Indian Empire.

Our friend, Professor Muller-Desroches, has been good enough to give us a lecture which, when historically criticised, tends to make us ponder on the growth and decline of French dominion in this

country, on its causes and secret springs of action.

He has pointed out with a master hand the broad outlines and

salient points of the story.

I think that, as Englishmen, our chief attention should be rivetted on to the historic lesson we may derive from a consideration of all the circumstances so graphically described by our able lecturer. I might say he has revealed to us the warning which the past is signalling to the future.

What strikes me as the warning to be derived from what the lecturer has said is the prime importance which devolves on the Home Government to trust in the judgment, to assent to the wisdom

and to bend to the experience of its officials in India.

The Supreme Home Government should repose complete and absolute confidence in the judgment, wisdom and experience of the able men who pass their lives administering the affairs of this vast empire, and who alone are capable, I maintain, properly to appreciate and esteem, at their proper value, the various shades of opinion and interminable phases of Indian home politics.

To such a want of confidence between the Government at Versailles and Dupleix's Government must be ascribed, as has so ably been sketched by our learned lecturer, the downfall of French

power in India.

Now I ask myself whether we are not, at the present day, somewhat exposed to a similar danger. The remarkable development of telegraphic and steam communication between India and Europe gives us cause to fear that the Home Government sometimes neglects, and occasionally forgets, that supremely important administrative axiom which is so tersely summed up in the phrase "Trust the man on the spot". That maxim, I maintain, has been our watchword hitherto till about 10 years ago and has been the secret of our administrative success, whether in India or in our Colonies.

I could develop this thesis and bring proofs to bear on this question, but I fear should I do so I should tread on the forbidden ground of politics. Hence I conclude by thanking our lecturer for his admirable address and I warmly congratulate him.

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#### NOTES ON ARTILLERY.

#### For Officers of other Arms.

By Major A. T. Anderson, Royal Field Artillery.

The artillery is generally spoken of as one of the scientific branches of the army, and as has been pointed out this title, however honourable it may be, has been and to a certain extent still is responsible for a good deal of misunderstanding and neglect on the part of officers of other arms. In former days even Generals. and with them the majority of those officers whose regiments laid no claim to any special scientific monopoly, were wont to regard Artillery, in the words of Colonel May, "with that respect, akin almost to dislike, that distinguishes the superstitious awe with which the unknown, or only partially understood, is regarded by the unilluminated multitude." And this feeling was undoubtedly fostered by the reluctance of Artillery Officers themselves to burst the bubble, and disclose the secret that the tactics of artillery are invested with no scientific mysteries, and that there is nothing in the science of Field Artillery at least that is beyond the mental grasp of any man whose intelligence has proved sufficient to obtain him a commission in any branch of the army. We may congratulate ourselves sincerely that those times are past, and that nowadays we gunners neither claim nor are credited with any esoteric scientific ability above our fellows.

And yet it must be admitted that a certain amount of this old aloofness still survives, and that occasionally officers of eavalry or infantry are to be found who will admit without a blush an ignorance on even elementary matters of gunnery, which they would be loth to display on any other military subject. Not for one moment do I wish to imply that this want of knowledge is all on one side, and that gunners are beyond reproach; it happens, however, that to deal with our own shortcomings is beyond the scope of my present purpose which is to endeavour to explain, simply and in a manner free from technicalities, a few points about artillery of the present day for the benefit chiefly of young officers of other arms.

It is not my object to write of actual drill, or of technical details such as the mechanism of the gun, etc., which, though unnecessary for those who are not gunners, can be learned if desired from the handbook, but only to deal with matters which it seems essential that every officer should be acquainted with. This knowledge too can of course be extracted from books, for there is nothing original in what I am going to write, but for any one not intimately acquainted with books on the subject, it is difficult to determine what to read and where to find it. The questions which

I propose to answer now, and which in one form or another I have often been asked by Infantry Officers, are:—What is the general procedure of a battery when coming into action? and what may fairly be expected of artillery in its support of infantry and in the effect of its fire?

As regards the first query. Guns may be laid directly or indirectly, that is, by looking over the sights at the target, or by using other means of laying which necessitate no view of the target at all to the numbers at the gun. A battery may therefore come into action in the open (and the experiences of the Russo-Japanese war seem to show that this will be done far less frequently in the future than in the past) or from a position under cover. Over the former case we need not linger as the procedure is perfectly simple and obvious. The latter case falls roughly under two headings:—

(a) when the effect of the fire can be observed from a position close to the battery;

(b) when it can only be observed from a point at some distance from the battery.

(a) Of course there is a good deal of variety in procedure according to different circumstances, but as my object is merely to give a general idea of the method of getting at the target, I'll assume a typical straightforward case, where the Battery Commander can see the target from the ridge of a hill, and decides to bring his battery into action under cover of the hill. The Battery Commander having completed his reconnaissance (for it is to be understood that he has galloped on a long way ahead of his battery, and has plenty of time to examine and select his ground) and chosen a suitable spot on the ridge from which he can observe the effect of the fire, sufficiently far to one flank to admit of his remaining there in safety while his battery is firing, plants two aiming posts in line with, say, the right of the target. He then moves back to the position under cover where his battery is to come into action, and plants his director in line with the two aiming posts. A mounted man is now posted 20 yards in front of where the centre of the battery is to be, in such a position as to allow the right gun to come up a yard or two to the left of the director, and the Sergeant-Major marks the prolongation of the line of fire about 50 yards in his It is here to be noted that if the aiming posts have been laid on the centre or left of the target, then the director must mark roughly the centre or the left of the battery as the case may be, instead of the right as in this case.

The director is simply a wooden ruler fitted with sights at each end and pivotted on a metal disc, which is graduated from 0 to 180 degrees on each side; the whole is fixed on a tripod at a convenient height for the eye. As the ruler can move independently of the graduated disc, it will be seen that horizontal angles can be measured by its means.

The Battery Commander places the director, as I have said, in line with the aiming posts, i.e., in such a way that the ruler is in

line with them, and the reading of the angle is 0. By this time the Battery Leader, ie., the senior Subaltern, has probably come up, and the Battery Commander, having given him such information as is available, goes to his observing station. The Battery Leader now selects an aiming point (if the B. C. has not already done so) that is some conspicuous mark as far off and as nearly at right angles to the direction of the target as possible, and measures by means of the director the angle between this aiming point and the director of the target. We will suppose that this angle is 92° and that the aiming point is to the right of the battery.

The guns on coming into action are laid by means of their dial sights, each gun 92° left of the aiming point. If this is done correctly it is evident that the right gun will be laid on the right of the target, and the remainder on parallel lines left of the line of the right gun, covering a front equal to the front of the battery, i.e., 100 yards. Each gun now puts out aiming posts to mark the line thus found, and the elevation is given by means of the range gear. Of course if the target is of quarter or less front than 100 yards the line can be adjusted by giving whatever deflection is necessary.

Such is the ordinary method of laying out the lines of fire when the target can be seen from near the battery. When this is not possible the procedure is slightly more complicated and is carried out as follows:—

(b) The Battery Commander, or any other officer he may detail for the purpose, proceeds to the spot selected for observation, at a distance from the battery which may vary according to circumstances but which is generally somewhere between 500 yards and a mile. He then plants his director—this one being fitted for greater convenience with a telescope instead of a sighted ruler—and measures the angle between the battery director, which has previously been set up close to the position where the battery is to be in action, and the target. Meanwhile his range-takers are taking the range from the observing station to the battery director and the target respect-

ively. Thus in the diagram if O represents the observing station, T the target, and B the battery director, the observing officer is able to find out by means of his director and his range-takers the angle TOB, and the distances OT and OB.

Now one need not be a great mathematician to know that if in the triangle TOB the angle TOB and the sides OT OB are known, the remaining side TB and the angle OBT may also be found. To save an officer the trouble of working out these values, the calculation is done automatically by a plotter, an ingenious little instrument which I shall not describe here, but which is so simple that a child could work it. The observing officer merely has to set the distances OT and OB on two arms of the

has to set the distances OT and OB on two arms of the plotter, and to clamp the arms at the angle BOT, when he can read off at once

the value of BT (i.e., the range from the battery to the target) and the "battery angle" OBT. These he communicates by signal to the officer at the battery director. That officer lays his director on O, then moves it through the number of degrees OBT, and the director is now of course laid in the direction of the target. The guns are then brought into the line of fire by means of the battery director as in  $(\alpha)$ .

It must not be supposed that the foregoing is a complete and detailed description of the methods touched on. For instance, if anyone after reading the above be induced to carry his investigations further and to examine the director, he will find that it does not consist of only one disc as described by me, but has actually three—a base plate, circular plate, and a plate of smaller diameter formed of one piece with the pivot. I have endeavoured however to omit all detail save what is absolutely necessary for understanding the system.

We now come to the second question: what may artillery be fairly expected to perform as regards effect, support of infantry, etc.? I shall answer this by a brief consideration of a few points that occur to me as of interest to officers of all arms.

(1) Time taken to come into action.—It will be easily realised that the methods I have described take up a certain amount of time. and those who understand them will be the less inclined to criticise artillery at managures or on service for its slowness in opening fire. When the fire is to be observed from a distant point, it can hardly be expected that a battery will get off its first round for about seven. or eight minutes after coming into action. Many things may happen to vary this time, and it will sometimes take a good deal longer. It is doubtless a great thing to open fire quickly, but it is even more important that a battery, under cover and probably up till now not observed, should be absolutely ready in every respect before firing the first round, and thus to a certain extent "giving away" its position. The Japanese in the late war were never in any undue hurry to open fire provided they could reach their positions unnoticed; as a rule not a shot was fired until they had entrenched themselves, and even prepared an alternative position to take up if unable to remain in the first one. The Russians, on the other hand, were generally in too great a hurry to begin.

Once a battery has opened fire the ranging, with percussion shrapnel, may take three or four minutes, after which the target should be under a hail of shrapnel bullets. A fleeting target however, especially at short ranges, will come under the fire of time shrapnel much sooner, as in such a case the range is guessed at and time shrapnel opened at once.

(2) Effect of fire.—At present I think the tendency on the whole is to underrate the effect of artillery fire. Of course if you are going to compare it with infantry fire the actual loss of life caused by the guns will appear quite insignificant; for although shrapnel is almost annihilating in effect against visible targets, just for that very

reason targets take good care not to be visible. Even so the Russo-Japanese war offers many instances of extraordinary material effect when guns got a good target to let loose at, though on the other hand it has often happened in a battle that three or four hundred shrapnel are expended for one man hit. It must be remembered that the main object of artillery is to keep down the enemy's fire; if then the moral effect of the guns is such as to keep the enemy's infantry cowering in their trenches and his gunners from serving the guns their rôle has been thoroughly performed even if not a single man has been killed. And even those who have never been under artillery fire need only watch the practice of a battery from a point near the target to admit that the noise of shrapnel bursting overhead, the screech of the fragments, and the vicious hissing of the bullets through the air are sufficient to affect the steadiest nerves.

I may mention that whereas the 15-pounder gun could only burst time shrapnel at a maximum range of about 4,000 yards, the time shrapnel of the new quick-firing gun will carry to over 6,000

vards.

(3) Support of infantry.—It is a question of great interest to infantry soldiers how long artillery can go on firing over their heads when they are attacking a position. As a rule when they are within 300 yards of the position the guns must cease to direct their fire on it; they would not however cease firing, but would increase their range and fuze to carry the shell beyond the position, and thus very probably catch the enemy during his retirement. So much, however, depends on the nature of the ground that it is impossible to lay down any fixed rule; if for instance the attack is being made up a steep hill, the guns can keep up fire longer than could be done on the flat. As the responsibility of keeping up the fire till the last possible moment rests with the Artillery Commander, so it is essential that the infantry should do everything in their power to assist, by means of signals or other preconcerted arrangements.

It is dangerous to fire over friendly troops at all when the range to the target is under 1,500 yards: but if the guns are firing at long ranges on the level, the infantry who are being fired over are fairly safe at 600 to 1,000 yards in front of the guns, and to all intents and purposes perfectly safe beyond 1,000 yards, until they are within, as

I said before, about 300 yards of the target.

(4) Changes of position.—Just a few words on this subject: it is often hardly realised even in high places that artillery is only effective when in action, and that frequent changes of position involve loss of time and of power; a few hundred yards one way or another make no difference in the value of artllery fire. I know of a case myself (it happened a good many years ago, so I am quite safe in quoting it) when an Infantry Officer, in command of a force of all arms, ordered a battery, which was pouring a most effective fire at a range of about 2,100 yards on a crest line held by the enemy, to advance to a fresh position within about 900 yards of the crest. The result was that not only did the battery come under heavy rifle



fire, but that its own fire delivered uphill at so short a range was practically useless. All experience in the recent war goes to show that changes of position in action will be rare in future. In fact it is almost an impossibility for so large a target as a battery on the move to exist under modern fire; guns are protected now by shields when in action, but they are as vulnerable as ever when on the move.

(5) Rate of fire.—It may be asked how this will be affected in future by the introduction of the quick-firing gun. The answer is that it will be affected just in the same way as rifle fire was by the introduction of the magazine. That is to say the ordinary rate of fire will not be much greater than formerly, but at the critical time it will be tremendously increased. That this rapid fire must be exceptional will be understood when the fact is stated that Q.-F. guns can be fired at such a rate as to exhaust the whole of the ammunition taken in the field with an army in less than an hour.

I hope I may have been fortunate enough in this short article to help a few readers to understand more than they perhaps did before of field artillery methods. In conclusion, as an ounce of practice is worth a pound of theory, I would recommend anyone who is quartered in the same station with a field battery to ask one of the officers to show him the director, plotter and dial sights; no one objects to doing the honours of his own "show," in fact most people like it, and a few minutes will suffice to teach a man all he requires to know.

### A HANDY FLARE-LIGHT.

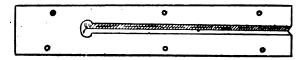
# By Major R. T. I. RIDGWAY, 40TH PATHANS.

The experience of the most recent frontier expeditions shows that in spite of the advantages possessed by us in daytime from the fact of having superior small arms, maxim guns and mountain artillery, the tribesman is still quite ready to tackle piquets and entrenched camps at night and is able to inflict much damage by hand to hand fighting whenever opportunity favours him: in fact it can be truthfully said that at night, especially if the night be dark, the advantages of better armament are nullified, and he is on level terms with us. It is unnecessary to dilate on the effect which attacks of this description cause on men who have already had a hard day's work: loss of sleep with consequent wear and tear to nerves and general effect on health, difficulties of issuing and cooking food and obtaining water, and additional casualties amongst men and animals include but a few of the discomforts and hardships entailed. An obvious remedy for this state of affairs is a system of search-lights sufficiently powerful to light up the most likely points of attack, but in the absence of a plant of any value which is sufficiently portable for such transports as is available on frontier expeditions-flare lights which can be placed at some distance from the perimeter and automatically break into flame when set off by the enemy, are the only expedient. (The question of starshell may be dismissed as they are no longer an issue to artillery. could only be used when artillery were present, and gave light for a very short time.) The disadvantages of the majority of flare-lights are that they are either composed of chemicals which are not available on expeditions, or are of such construction that they get damaged in transport or by wear and tear, and also require extra transport. The ideal flare-light is one which will give a good light over a broad space for a considerable period, invariably responds to any movement of the enemy in its proximity by bursting into flame in any weather, requires little or no transport, can be made of materials available on any expedition, and can be easily set up An ideal is naturally almost impossible to arrive at, but the flarelight which it is proposed to describe is one which fulfils the majority of the above conditions. It has been experimented with at manœuvres for the past three years in all weathers, and has given satisfaction. Unfortunately no opportunity has arisen to test it on active service, but the success with which it has met in night firing at training camps promises that it would be of service in frontier expeditions.

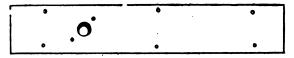
The materials required are two pieces of thin board, which can be got from any packing case; a small wooden block which can also be cut of the same; a few nails; some cartridges, either shot, gun or rifle, preferably of black powder; some string or wire, thin

A THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.

paper, tow and kerosene oil. The pieces of board should be about 1 to  $1\frac{1}{2}$  feet long by 6 inches broad and  $\frac{1}{2}$  to 1 inch thick: in one, which will form the lower board, make a groove to hold a train of powder: this groove can be made with any knife, and should extend for about three-fourths of the length of the board, and be slightly enlarged where the groove finishes in the board: three holes at each side made ready for nails to hold it securely to the upper board ends, the preparation of the lower board, thus:—



In the other board, which will form the upper portion of the arrangement, cut a circular hole large enough to hold the base of the cartridge used, in such a position as to superimpose on the enlarged end of the groove already made in the lower board: make three holes at each side in the same relative position as those on the lower board, for nails; and two others, diagonally to the circular hole, to hold in position the nails which will hold the block of wood, described below, in position, thus:—



In the block of wood, which should be a cube of about 3 inches, bore one centre hole large enough to admit of a large nail working easily through it, and two others at diagonal corners to fix nails into to secure the block to the upper board, thus:—



Next, take a couple of cartridges, remove the shot or bullets, pour the powder on to a piece of paper for safe keeping and cut the cartridges down to the brass rim, leaving them like this:—



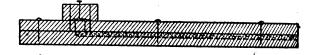
The most handy cartridges are 12-bore shot, as they allow of the paper being cut away quickly and easily to the brass rim: brass or others can however be torn or cut down to the requisite length.

Then fill the groove in the lower board with powder, more especially the enlarged end: it will be found that the powder from two cartridges will be more than sufficient for the purpose: and

keep the remaining powder. Place nails into the upper board, and carefully fix it on to the lower board so as to shake out as little powder as possible. When closely fixed together, pour a little more powder into the hole in the upper board, and then force the prepared cartridge well into it over the powder, so as to allow of the powder reaching up to the cap. Having done this, tap the powder well down to the cartridge end of the groove, fill up with more, if necessary, and place a wad of paper at the end of the groove to prevent leakage. Next take the block, with its two corner nails already in it, and fix it to the upper board in such a position that the centre hole is exactly over the cap of the cartridge beneath it. This being done place a large nail, with head projecting about \frac{1}{4} to \frac{1}{4} an inch, in the centre hole.

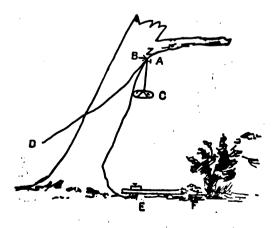
The apparatus is now ready to be placed in position, and will

appear like this:—



The next step is to choose a spot at which to place the flarelight: usually speaking in some nala or hidden ground leading up For piquets, the ground over which attack is most to be feared would be the most suitable place. Having chosen the spot, look out for an overhanging tree or bush: if none are handy, a bit of cliff or rock or even mud wall may allow of arrangement, or if nothing is available a tripod of sticks can be fixed up. Place the prepared boards under whichever of the above has been determined on, so that a flat stone or brick or weight of some kind can be hung with a string to fall on the nail in the centre hole in the block. To find the true perpendicular, test with a small weight on a string, used as a plumb. Next drive in a couple of nails into the overhanging branch or rock high enough to allow of the weight when released to hit the nail in the block sufficiently hard to cause it to pierce the cap of the cartridge and explode it, due allowance being made for the length of string to which the weight will be The two nails should be driven in at one height, with about 2 inches between them, so as to allow of a stick resting on them. The nail on that side on which the pull is expected should be put in only sufficiently strongly to withstand the strain of the weight. Should a pull be arranged for on both sides, both nails should be so fixed, but this requires delicate management, and in most cases the trip wire or string can be so arranged as to cover the ground over which the enemy are expected from the pull on one side only. The weight should then be tied with a string to a piece of stick balanced on the two nails, so as to hang immediately over the nail in the block. This weight may be a stone or brick, or even a box filled with stones: all that is desired is that it should

have a flat bottom so as to hit the nail fairly, and be of such heaviness that its position is not changed owing to being swung to and fro by wind. It is advisable to test once whether the weight is at a sufficient height from and in true line with the nail in the block to ensure its piercing the cap. This can be done, without exploding the charge, by placing an already fired cartridge under the block nail. It will be found that with a weight of some 4 to 6 pounds a drop of 3 to 4 feet is effective. Having satisfactorily arranged this, tie to either one or both of the nails, as desired, on which the stick which holds the weight rests, string or trip wire. This should then be carried over the ground where attack is expected at a height of some 21 feet, and fixed on to some convenient bush or stone, so that the enemy is bound to trip over it. While this is being done, the paper wad can be carefully taken out of the board: two or three pieces of thin paper, such as will readily light placed underneath the end of the board, and a small pile of the remaining powder placed on the paper and at the end of the groove so as to connect with the track in the boards. Over this place more paper, and some tow saturated with kerosene oil over alf. Should a dry bush be handy, it will make a ready object to catch the flame: otherwise dry leaves or grass can be so placed as to answer the same purpose. If rain threatens, unless the overhanging tree gives protection to the flare, arrange some overhead cover to it by means of sticks and leaves, or brushwood. On one occasion after a severe thunderstorm over 50 per cent of this form of flare-light answered satisfactorily, although, as the storm was quite unexpected, no special arrangements had been made to cover the charges. The average time that one well covered with leaves and inflammable material, such as small bushes and dry tussocks of grass, is from 7-10 minutes, a light being given sufficient to expose an enemy to fire at 200 to 300 Below is a rough drawing of the flare when completely arranged :--



A. Nails.

B. Balancing stick.

C. Weight.

D. Trip wire or string. E. Flare.

F. Powder, paper and tow.

The above detail has necessarily taken long in telling, but it will be found that after very little practice, the actual fixing of the flares (presupposing that the boards and block are ready) will take a very short time, some 5 minutes at most. They can thus be easily placed where required just before or at dusk, so as not to give their position away to the enemy. The boards can of course be always held in readiness, as they cost nothing, and can be carried anywhere. One per company would allow of piquets and such of the regiment as were on the perimeter being fully supplied. Although rough in construction, it is effective, and, as will have been seen, can be fashioned out of materials which are available in any expedition, and, when once explained, by any one who is likely to command even a small piquet. It is perhaps needless to add that other surprises, such as fougasses, and explosions of gun powder, gun cotton or dynamite could be arranged by means of these flares to act as a deterrent to an enemy anxious to advance over a given space.

# EXPERIMENTS WITH FLARE-LIGHTS.

By LIEUT.-COLONEL H. R. D. THRING, 27TH LIGHT CAVALRY.

In the Journal for January 1909 there was a description of flares for lighting up the field of fire in front of a perimeter camp.

Whilst in Squadron Training Camps the various squadrons of this regiment protected their camps with trip wires and flares of this description, and on one occasion only did a scout (in this case an officer) penetrate camp without letting off a flare and being

fired on.

Result

The officer who did get into camp only accomplished this by crawling on his hands and knees for over a mile, feeling for the trip wire. This could be frustrated by laying dummy wires irregularly outside the limits of the regular line, for a scout after carefully stepping over the dummy wire, would probably do the remainder of his journey in a more comfortable position and duly fall over a live trip.

In order to ascertain the results of firing at targets lit up by these flares, I had a series of experiments carried out on the night of the 7th April.

The experiments took place about 7-30 P.M. before the moon rose; though not a pitch dark night it was so dark that nothing could be seen moving at over 20 yards' distance. The men firing were not picked shots, but were chosen at random from two squadrons.

Targets used were life size wooden dummies painted black, representing men standing.

The first experiment was at a range of 50 yards, at a single dummy representing a scout. This was lit up by a flare, and 12 rounds fired at it. The flare in this case consisted of chlorate of potash and sugar only, no bonfire being placed over it. It lit up the target fairly well, but aiming was somewhat difficult as one could not define the foresight; when the flare had died down, a second was set off, this time in contact with a bundle of grass and dry sticks. This not only lit up the dummy but gave enough light to define the foresight; 12 rounds were again fired at this same dummy.

On examining this target 12 hits were found, out of the 24 rounds fired.

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Second experiment.
Result.

The second experiment was made at 100 yards' range at a similar single dummy This was lit up by a flare only (no bonfire and 15 rounds fired at it. Result, 4 hits.

The third experiment was at a row of 8 dummies similar to those used in the previous experiments, range 300 yards, interval between dummies 6 feet.

These were lit up by a flare placed in contact with a bonfire of

grass and dry wood.

The targets stood out clearly, and although it was difficult to define the foresight against a target, a fair idea of the amount of foresight to be taken could be got by first aiming at the bonfire, and then swinging the aim on to a target.

At this range 55 rounds were fired and 21 hits counted; those targets nearer to the fire had most hits, one dummy having no less than 8, mostly in the chest. In all 94 rounds were fired in the three experiments, and 37 hits obtained a percentage of 39

hits obtained, a percentage of 39.

What percentage would be obtained on an enemy unlit by flares, aim being taken in the direction of the noise arising from rolling stones or possibly at a flash from a rifle, I am unable to estimate, but I doubt it would reach as high as 2 per cent.

As the targets were quite invisible without the aid of lights, I think that the experiments clearly demonstrate how very useful these flares would be

on service. To sum up the conclusions arrived at are:

(i) A flare without a bonfire would give sufficient light by which to shoot a sniper or a scout, if the latter was within about 5 yards of the flare itself at the moment when he came in contact with the trip wire. Hence the flare should as a rule not be used without a bonfire in contact with it.

(ii) A small bonfire of dry grass and sticks would give a sniper or a scout very little chance of escape at ranges up to 100 yards, wherever the scout might happen to walk into the trip wire. It should be noted that trip wires should be laid in lengths of not more than 60 yards, measured outward from a peg situated midway between two bonfires 120 yards apart. (See Journal for January 1909.)

(iii) A substantial bonfire used in connection with a "Pull flare" to light up a field of fire would render an advance over the distance between bonfire and perimeter very costly, all objects within a wide arc around the fire being

clearly visible.

(iv) It would be almost certain death to any man attempting to extinguish the fire; though a well organised attempt might succeed but only after great loss, as

all the party would be subjected to a heavy and accurate fire.

(v) With a line of pull flare fires outside a camp, artillery, not being under the necessity of firing star-shell, would be able to train all their guns to command the comparatively obscure portions of ground lying midway between two bonfires. The whole front being more or less visible the artillery would be able to obtain far greater results than could possibly be the case if a proportion of the guns were occupied in firing star-shell, whilst the remainder could only fire by the light of the star-shell, or be pointed into total darkness.

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# MACHINE GUNS.

# A lecture delivered at the Indian Staff College, Quetta.

By Captain F. S. Keen, 45th Rattray's Sikhs.

I do not propose to enter into the history of machine guns, it is sufficient to say that they are a development of recent times. The only two great campaigns in which they have been extensively employed, are the South African War, and the Russo-Japanese War. There are, therefore, several points still open to discussion with regard to the principles of their employment and organization.

The points with which I propose to deal particularly, are the

following:—

(1) Do machine guns justify their inclusion in the armament of a modern army?

(2) What should be the guiding principles in their employment in action?

(3) What is the most suitable organization for them?

I only refer to small bore machine guns, not to "pom poms". Nor will space permit me to discuss the different types of guns and mountings, interesting and important though these questions are.

2. Since the South African War, machine guns have been adopted by, I think, all European nations as part of their armament, and this fact might perhaps be considered sufficient proof of their utility. There are, however, some who still doubt their value. Only the other day, in this very building, I was asked if I really believed in machine guns, and if I didn't think 20 good men with rifles were better. I do not intend to attempt to draw comparisons, but I hope to show that machine guns are capable of materially helping those 20 good men in the execution of their task.

On what does the machine gun base its inclusion in the armament of a modern army? On the fact that it can discharge a hail of rifle bullets from a single barrel, that is to say, practically, from the front occupied by a single man. The maxim gun is capable of delivering short bursts of fire at the rate of 600 rounds a minute. According to Training Manuals, Appendix 1905, page 92, the highest rate of rifle fire, consistent with reasonable accuracy, is about 15 rounds a minute. If this standard is adopted, the volume of fire delivered by a maxim gun is about equivalent to that of 40 rifles. Let us now see if this power can be turned to good account.

3. At the close of the South African War, reports on the machine gun were called for from General and Com-South African reports. manding Officers. These are of exceptional interest, as it was mainly on the results observed in this war that machine guns were adopted by European nations. These reports Some Officers condemn the guns as useless vary considerably. encumbrances, while others are loud in their praise. Lord Methuen and General Jones, who commanded the Guards Brigade, both report the machine gun as practically useless on the offensive, pointing out the difficulty of ranging and of finding a suitable target. The C. O's. of Guards Regiments, with one exception, endorse this opinion.' On the other hand General Watter Kitchener gives it as his deliberate opinion that "the effects cannot be exaggerated, and, if understood tactically, the machine gun dominates the whole question of attack in the future"—and that, as far as his observation went, the lost opportunities owing to neglect of proper tactical use of machine guns, was the most important lesson of the war. Major Bethune writes as follows:—" I do not consider a maxim of much use to a mounted Infantry corps, as the movement of the troops \* \* is so rapid—On one occasion only was it of real use, when on piquet, the gun enfiladed some 25 Boers in a trench, and killed or wounded them all in about 3 minutes." Surely it is worth considering some means of overcoming the difficulty, of rapidly transporting a weapon that is capable, given a suitable opportunity, of such effective action. Colonel Thornevcroft writes :-

"The moral effect produced on the enemy by the machine gun has been great. I have frequently used it to support the advance of my scouts when approaching a ridge, etc., when its firing has either stopped, or very much reduced the effective fire of the Boers, and enabled my scouting line to advance with little loss. Machine gun fire on one occasion entirely cleared the camp of the German Commando, and on all occasions has given valuable assistance in keeping down the enemy's fire, especially their long range sniping."

Major Bambridge speaking of Prinsloo's surrender, writes:—
"When taking over the prisoners, I was asked by several Boers to show them the man who was working my maxim, as they had had a much worse time from that man than from the four 15-prs. during the last two days of the fighting. On the evening of the first of these days, I saw the Derby gun catch a party of dismounted enemy and they left behind 15 horses and 10 men. The next afternoon, they got into 200 dismounted men at 800 yards, and 25 horses and 14 men were left behind."

4. These are, I think, fair samples of the favourable and unfavourable reports. I think there is sufficient weight of opinion, supported by specific instances, to show that the machine gun is capable of producing considerable effect, both moral and material. But how can we account for the numerous unfavourable reports? Varying

conditions in the different parts of the theatre of operations are probably responsible in some degree for this diversity of opinion, but it seems to me that the real solution lies largely in the existence of a lack of uniformity in the training of the detachments and the handling of the guns. Major Bambridge had two machine guns, from different regiments, attached to his corps, and he reports that one always worked satisfactorily, while the other was continually out of gear. This state of affairs remained unaltered, even when both detachments were re-armed with new guns. The machine gun is rather a complicated piece of mechanism, and moreover opportunities for its use are in most engagements of rare occurrence and fleeting when they do occur. The effective use of the gun, then, is largely dependent on the efficiency of the detachment, and on the ability of the commander to take advantage of any opportunity that may occur.

5. All the observers of the Russo-Japanese war whose reports

I have read, speak highly of the moral and
material effect produced by machine guns.

Major Kuku reports that they were used with great effect on both sides at Port Arthur, particularly on the defensive and according to Colonel Hume, all brigade and regimental commanders were very enthusiastic about them, especially in defence and in making good positions won.

6. I now turn to the second point, viz., the guiding principles of the employment of machine guns in action. In the first place, should the gun be regarded as a long range weapon or not? I doubt the wisdom of attempting to dogmatise on this point. We have seen that the machine gun is essentially dependent on opportunity, and if a suitable opportunity offers at long range, it should be taken advantage of. If the fire effect cannot be observed, the opportunity ceases to be a suitable one.

It is impossible to say that the rôle of the machine gun is identical with that of artillery, as it lacks both the range and the shell power. Ulrich, war correspondent of the Cologne Gazette, with the Russians, relates how, on the 27th Ferbruary 1905, the Japanese opened fire on INGEA village with machine guns at 1,500 to 1,800 metres, producing no effect whatever. On the other hand neither can the rôle of the machine gun be regarded as identical with that of infantry, as the gun manifestly cannot fix bayonets and charge. The first great guiding principle seems to me to be to regard the gun, under all circumstances, as an aid to the attainment of fire superiority.

7. In the infantry attack, the guns must be pushed up sufficiently close to render effective aid to the firing line, whether this can be done at 1,500, or whether it will be advisable to push forward to decisive range, depends on various circumstances. The possibility of observing fire effect, the nature of the target, and the necessity for avoiding such

losses as will render the gun inoperative. It may be argued that constantly limbering up and advancing leads to loss of fire power; but the enemy will not, as a rule, expose himself to effective machine gun fire longer than he can help, and the opportunities will, therefore, generally be of short duration, and in the interval the gun would often be better employed in moving forward under cover than remaining in action in a position where a target may not again present itself. Ulrich reports that "to support their infantry attacks, the Japanese concentrated their machine gun fire on important points at decisive moments, and one of their favourite plans was to bring them into action as rapidly as possible in some shelter trench or village just torn from the enemy's grasp by a successful assault. The murderous fire of the machine guns became a powerful aid in the repulse of attempted counter attacks." An example of machine guns making good a position won, occurred during the battle of Mukden, on the 1st March. The Russian position of SHA SHAN was taken at 8 P.M. They however still held two positions, distant some 500 and 1,000 yards, from which they poured in a hot fire and threatened the flank of the Japanese. The Japanese Infantry were somewhat The position was disorganized, and the Artillery not yet up. rendered secure against counter attack by machine guns.

8. With regard to the defensive, it is recognized that machine gun fire is not effective against extended lines of skirmishers, and, therefore, it would frequently be wisest to construct several alternative positions at likely points, hold the guns in reserve at the outset, and push them up to the firing line at decisive moments, to repel an assault or aid in the counter attack.

The element of surprise is thus introduced.

The same result may sometimes be obtained by placing machine

guns in forward positions, well concealed.

During the attack on WANG CHIA WO PENG in the battle of Mukden, the Japanese assault was temporarily repulsed by sudden fire from Russian machine guns in concealed positions. At PENSIHU on the 11th October 1904, the Russians had gained a local success on the Japanese right flank. A Japanese Cavalry brigade with four machine guns made a counter attack on the Russian left, enfilading them, and turned the tide of the battle at this point.

So we get a second principle, both in attack and defence, that is, to keep the guns handy for use at the decisive moment. For this purpose it is probably most often advisable to push the guns well up while in the attack, at any rate, opportunities up to the limits of

effective range should not neglected.

9. With a rearguard retiring before a civilized enemy the use of machine guns is limited, as these combats as a rule take place at long range.

10. In a Cavalry combat they should work with the Horse Artillery, and may obviate the necessity for any other escort.

With regard to savage warfare, a study of operations on the N.-W. Frontier seems to accentuate the Savage Warfare. limitations of machine guns.

Against such foes as Afridis and Mohmands, we are generally on the offensive, and owing to the skirmishing tactics of the hill men, and the excellent cover afforded by the rocky hills, a really favourable target rarely presents itself. Machine guns are reported to have been usefully employed in the recent Mohmand expedition in covering the advance and retirement of piquets, but their effect seems to have been more moral than material, and the Pathans would probably be quick to recognise this. In a retirement in the hills it seems sound to retire the guns alternately, so that one gun would always be in action.

On the defensive, machine guns proved their value at Chakdara in 1897, where the conditions were almost ideal for their employment, swarms of the enemy charging up to the walls of the fort with fanatical courage. At Omdurman too they were used most effectively.

Against such a foe as the Zulus, they would be invaluable for the defence of posts.

12. With regard to the number of guns to employ together, here again it seems to me undesirable to Number of guns employed together. lay down hard and fast rules. If employed to sweep a road, for instance, the fire of two guns would probably be as efficacious as six. To repel a Zulu impi, or masses of infantry advancing to the assault, the more guns the better. This is a point on which our official text books disagree in rather a confusing way. The Training Manuals, Appendix 1905, Chapter VI, page 157, sec. 2 (6), says the guns should generally be used singly, sometimes in pairs, rarely massed. Infantry Training, 1905, section 149 (5), gives their normal use as in pairs, on occasion massed or singly. Cavalry Training, 1907, section 150 (4), says they should, as a rule, be massed during the Cavalry fight, but may be in pairs.

The principle should be, I think, to employ so many guns as are necessary for the task in hand at the moment. The occasions where it would be wise to use the guns singly would, I think, be very If a single machine gun is relied on for the defence of an important locality, a single lucky shot may render it inoperative. This happened at Chakdara, the foresight of the gun on top of the fort being shot away, the gun was out of action for hours. It is a case of having all your eggs in one basket.

13. I now come to the question of the Organization. most suitable organization for machine guns.

At present a section of 2 guns is, as of course you are all aware, an integral part of every Cavalry regiment and Infantry battalion of the field army at home, and of every Infantry battalion in India.

There is little doubt that, hitherto, there has been a great lack of uniformity of training and employment of machine gun sections.

I called attention to the disparity between the reports after the South African War, and drew this deduction from it. I have known Infantry regiments of the Indian army in which no attempt was made to secure continuity of command of the machine gun detachment, which was consequently quite inefficient.

I know of one regiment, ordered on the frontier operations last year, in which the officer who had commanded the section for some years was detailed for command of the depôt, and consequently

did not accompany the regiment on service.

The memorandum on Army Training, 1908, the latest official pronouncement by the Army Council, say that the guns may be used singly, in pairs, or in brigade. To this end it lays down that arrangements shall be made to train detachments periodically in brigade, the training to be directed on broad lines, under a selected officer, highly specialized in fire direction, who will ensure that a correct and uniform sytem is followed.

A strict adherence to the letter and spirit of this memorandum would do much to ensure more uniform efficiency, but does it go far enough?

The highly specialized officers would doubtless have other duties

to perform, and might easily not be available in war time.

It seems to me that our system is liable to lead to loss or waste of power. A battalion detailed to construct entrenchments, or a Pioneer regiment to make a road, is, unless otherwise ordered, accompanied by its machine guns, though there may be no possible chance of an opportunity occurring for their use. I have had command of the machine section of my regiment for some 6 years, but have never known the guns brigaded at manœuvres, nor detached from the battalion. Let us now consider what there is to be said in favour of a Battery organization of say 6 or 8 guns. A Battery to form part of a Cavalry or Infantry brigade—organized on the lines of a Mountain Battery of Artillery. The officers seconded for 3 or 4 years from Cavalry and Infantry, the men enlisted for permanent service with the Battery. In the first place officers and men would be able to give their undivided attention to the gun, and I do not think there can be a doubt that more uniformly efficient units would result. Officers too, from constantly studying the uses of the gun under varying circumstances, would be more likely to recognise and seize the fleeting opportunities that may occur in an engagement.

The Battery would naturally be divided into sections of two guns, each under an officer, which could be detached as required with regiments and battalions. Now that brigades of one field army are, in the majority of cases, trained together in peace time, the Battery of machine guns would be trained with the other units of the brigade, and so all would get to know each other's methods and requirements. By this system, machine gun commanders would have a freer hand in action. The question of the supply of spare parts and mountings, etc., in the field would be simplified. I am bound to confess that my researches, in getting up this lecture, have inclined me to the opinion

that the Battery of six or eight guns is more likely to give us uniform efficiency and to meet the varied requirements of battle. I have dealt with the subject solely from the point of view of training and tactics, whether the question of expense would bar such a scheme I do not know. Myself, I doubt it, as I think the gain in efficiency would be so great that we could afford to sacrifice two guns per brigade and have a Battery of six guns.

14. Machine guns were issued to the Japanese field army after the battle of the Sha-ho, 14 per division, and were organized in two batteries of six guns, and an independent section. During the battle of Mukden, the batteries were attached to brigades, and generally split up into sections of two guns for attachment to regiments or battalions. Colonel Hume reports that all the officers he consulted were of opinion that a battery of machine guns ought to form an integral part of each Infantry regiment, but that this arrangement should not perjudice the temporary attachment of the battery to another unit, should necessity arise and the G. O. C. division so ordain. A Japanese regiment, it must be remembered, consists of three battalions.

15. Apparently, the numbers of machine guns allotted to Russian corps and divisions varied. Ulrich writes that the general concensus of opinion was to the effect that strong and united groups or batteries of machine guns will be absolutely essential on the modern battlefield.

Summary. 16. To summarise, the conclusions I draw are as follows:—

(1) The machine gun does justify its inclusion in a modern armament. Given a suitable opportunity, it is capable of producing considerable moral and material effect. A great deal depends on the efficiency of the detachment.

(2) The machine gun must be regarded, under all circumstances, as an aid to the attainment of fire superiority.

(3) In attack and defence machine guns should be kept at hand for use at the decisive moment. For this purpose it is probably most often advisable to push them well up, while, in the attack at any rate, opportunities up to the limit of effective range should not be neglected.

(4) As many guns should be employed together as are necessary for the task in hand at the moment. The use of

machine guns singly can rarely be wise

(5) A battery organization would probably give us more uniformly efficient units, and facilitate the employment of the guns either in battery or in pairs, while obviating possible loss of power.

German Organization sion that the battery organization is more suitable to the requirements of machine guns, I have not been influenced by Germany. I did not get hold of the

handbook of the German army till after I had written this lecture out in the rough. This handbook agrees with my deductions remarkably closely; laying down that generally speaking six gun batteries of machine guns are not to be broken up, occasionally two guns may be detached for some special purpose. The use of machine guns singly is forbidden.

#### MODERN WAR.

The following is a translation, made by Mr. Somerville, Chief Clerk at the Staff College, Quetta, of an article in the *Deutsche Revue*, attributed to General von Schlieffen, a former Chief of the German General Staff.

It will be remembered that this article created some stir. It was quoted by the German Emperor in a speech made to German Generals. The Emperor, at the time, gave his Imperial approval to the sentiments expressed in the article. It was later explained that the Emperor's approval was limited to the military portion of the article and did not necessarily include the political opinions expressed therein.

With such high approval, we may perhaps regard this article as the latest expression of German ideas as regards the battle of the future. The article is, however, not strictly official, and does not necessarily accord literally with German regulations. It is also, in some respects, palpably speculative. Still, taken as a whole, we may consider it as a fairly true indication of German military tendencies.

It will, therefore, be very instructive to compare the general military principles expressed in this article with the very latest principles adopted by us, and expressed in our new Field Service Regulations, which now supersede "Combined Training."

Many points of similarity will be noted; there are also several

important differences.

The chief and most essential difference is this that, whereas the German ideal whole-heartedly supports the Moltkeian principle of strategical advances on a wide front from different directions and the tactical envelopment of the enemy on both flanks, by the combined attack of the different columns on the battlefield, our regulations reject this idea as unsuited to our army.

The General Staff at home have arrived at this opinion after much reflection and sifting of evidence. It is, therefore, a deliberate expression of the official view and, as such, cannot be called in

question.

The premise on which our General Staff work is no doubt, though not so officially expressed, the fundamental axiom that the British Army, being a small army, must normally expect to meet

an enemy who outnumbers it.

From this premise it is, no doubt, argued that the best opportunity of success will be afforded us if we adopt, strategically, the principle of Interior Lines, and, tactically, the principle of manœuvring with a large reserve. In other words, if we still adhere to those methods which were more commonly made use of by Napoleon.

The developments in numbers, means of communication, fire effect of guns and rifles, and other matters, which caused Moltke

to depart from Napoleon's principles of war, have, needless to say been fully considered by our General Staff. The upshot of their reasonings is that, despite all these developments, and despite the experiences of 1866, 1870, and 1904-05, the British Army will do, best to adhere to those principles which, for the sake of conciseness, we may describe as Napoleonic.

There is, however, nothing in the directions of our General Staff which would compel us to pedantically adhere to those principles, if circumstances clearly indicate that they are inapplicable.

All our regulations say is this—that the Napoleonic principles are better suited to our army, and therefore they have been chiefly considered in our regulations.

We might perhaps have wished that, as, ex hypothesi, our enemy will be more numerous than ourselves, and therefore he will probably, consciously or unconsciously, adopt the methods of Moltke, more space might have been taken in our regulations to explain these methods, so that we might not run the risk of failing to understand our enemy's principles of strategy and tactics. But no doubt, considerations of space, which must be regarded in official publications, have prevented this course being followed.

Another point, and one in which the German ideals go further than we do, is in the matter of frontage for an attack. The German article, purporting to derive its lessons from the Manchurian War, contemplates attacks with three or less, men to the metre. Our regulations, also deriving their lessons from the latest example, consider that a decisive attack should not be delivered with less

than three to five men per yard of front to be attacked.

There was a time when the British Army prided itself on its capacity to fight on a wider front than any foe which it ever met. It was this capacity which caused its fire to be more effectual than the fire of any other troops. It was greatly due to their power of extension that we won our battles in the Peninsula. It was said of the great Duke of Wellington that, even while he was in India, he had recognized that this British capacity for fighting in line, while its enemies were obliged to fight in column, could be utilized with every chance of success on the fields of Europc.

If the article, here translated, is really expressive of what the German Army is now prepared to do, we must, following our regulations, modify to some extent our ideas as to the comparative

power of extension of a British force.

The probability, however, is that extensions have been lately much overdone, and our General Staff are obliged to swing the pendulum decidedly in the opposite direction, to secure equilibrium. No one really doubts the ability of the British soldier of the present day to exhibit the same fighting qualities as his forefathers did.

There is another possibility which must also be considered; and that is that the lessons of history are differently read by different people, and that even the facts of history are differently recorded by different observers. It follows, therefore, that the

events of even the latest campaigns may provide very different

lessons, dependent on the evidence which may be available.

The Germans, pre-conceiving the type of battle they mean to fight, and enforcing this conception on their enemy by a ruthless advance and determined initiative, are able to assign to their cavalry on the battlefield a very definite rôle. That rôle is—first, to ascertain the position of the enemy's flanks, and secondly, to complete envelopment by acting in extension of one or both flanks of the attacking force. If the complete envelopment fails, the cavalry is favourably placed for the pursuit on parallel lines (article pages 17 and 18).

As we have no pre-conceived idea of the battle, but are obliged to some extent, to await events and then act with a large reserve as seems best at the moment, we cannot assign to our cavalry so definite a task. We rely, therefore, on concentrating our cavalry on the battlefield in a suitable waiting position, and keeping up a close telephonic (or other) communication between the Commander-in-Chief and the Commander of the Cavalry. In this manner it is anticipated that we shall be able to use our Cavalry with decisive

effect on the issue of the battle. (F.S.R., I, 106 (2)).

The German article, and here it is somewhat speculative, contemplates a very free use of aeronautic inventions in the battlefield. If this is justifiable, much of the exploration duty of cavalry is lightened. No longer will we be obliged to demand of our independent cavalry that it shall pierce the enemy's protective screen and find out the movements of his main columns. Such work can be allotted to the aeronaut. However, we have not yet reached this stage of development, and for the present our knowledge of the enemy's movements must principally depend on the enterprise and ability of our cavalry.

We need not remark on the lurid political situation so graphi-

cally described in the article.

Colonel Drake has explained in a footnote the reference to a "haven in Jutland." The strategical manœuvre involved in this hypothetical landing appears to have been taken more seriously in Germany than was probably ever intended in England.

(Translated from the January 1909 number of the Deutsche

Revue.)

The Peace of Frankfurt only outwardly terminated the struggle between Germany and France. Although arms were grounded, a

latent form of war nevertheless continued to be waged.

One of the two opponents discovered a quicker firing rifle, a longer-ranged gun, and more effective projectiles than had been used hitherto. She might rest assured that the other Power, within a very short time, would produce a still quicker firing rifle, a still longer-ranged gun, and a still more effective projectile. While each was unremittingly striving to out-do the other, they eventually succeeded in attaining equality almost and weapons scarcely susceptible of further perfection. Thenceforward, it became their earnest

endeavour to gain an advantage over their out-witted enemy in the imminent war of revenge by means of superior rifles and guns. Each strove to reproduce a similar state of things to that of 1866, when one of the opposing Powers had stepped into the arena armed with the needle-gun, and the other with only a muzzle-loader. In the course of the years, there have occurred moments when one or other of these two Powers has believed herself to have attained the goal, and when it seemed that the only thing to be awaited was a favourable opportunity that could be made the pretext for declaring war on the opposite camp. Still confidence in new weapons, the result of painstaking experiments, never sufficed to suppress all other considerations and doubts. While temporising, the opponent was allowed time to recover the lost ground and even to get further ahead.

The other Powers could not witness this competition with indifference. Whoever wishes to make his voice heard in Europe, or anywhere all over the world, cannot afford to remain too far behind the two States which set the pace in the matter of arming their soldiers. For the other Powers it was not necessary to take part in every single phase of the battle. It was sufficient to make use of the object-lessons afforded and attain the same end with less

exertion and less expense.

After the lapse of several decades, the German-French strife has reached the point (and the technical departments, goaded to their utmost, have brought it about) that almost all armies, not of Europe only, but also those of the Far East and West, find them-

selves in possession of weapons of pretty nearly equal value.

Rifles and guns are light and handy, are quickly loaded and quickly fired, are of great range and accuracy, and command great spaces. A new powder betrays neither the rifleman nor the gun by far visible smoke. A projectile of the smallest circumference and weight admits of the accompaniment of great quantities of ammunition and makes possible the fullest utilization of quickness of fire. It seems useless to strive to rise to still higher perfection in these matters, or to set new tasks to experimenters. The ideal has been attained.

One projectile has scarcely accomplished its flight before another can be sent after it. If only the hand is sure and the eye sharp, the most distant object can be hit. The propelling force is so great that almost the whole space between the muzzle of the piece and the object is dominated. The projectile cannot be further reduced in size. Indeed, although it suffices to put the civilized European out of action, it does not do so with any degree of certainty in the case of the son of nature of uncivilized parts of the world.

No body of troops in close formation, no men standing free and upright, can afford to expose themselves to the rain of

<sup>\* (</sup>Notk.—We have yet to get automatic rifles and silencers.)



projectiles. Even at Mars la Tour, when opposed to an imperfect and obsolete weapon, a certain Prussian regiment, advancing to the attack in close order, lost 68 per cent of its strength in rather less than half an hour. Three years ago, the Japanese Nambu Brigade had to pay for its courageous advance with a loss of 90 per cent in a far shorter period of time. In South Africa, a single covered gun easily strewed down in front of it fourteen charging attackers.

The science of weapons has the most brilliant triumphs to celebrate. But it has given no one that which Germany as well as France has striven for, and that which all other Powers desire to attain—easier conditions in battle and superiority over the enemy. While the science of arms distributes its expensive gifts to all, indifferently and impartially, it at the same time prepares for all the greatest difficulties and the weightiest disadvantages. It is easy to say how, by means of these effective weapons, one can strew down and annihilate one's enemies. But how to escape annihilation oneself is a problem not so easy of solution. A complete change in tactics became necessary in consequence. It is no longer possible, as in the 18th century, to march up to a position in two lines close to one another and deliver volleys at the enemy from no very great distance. Both armies would, inside a few minutes, be wiped off the surface of the earth by magazine fire. It is out of order to make Napoleonic columns, as deep as they are broad, advance to the attack of a hostile position. A hail of shrapnel would smash them to pieces. Nor is it practicable, as was considered the case only a short time ago, to attempt to overcome the enemy by the fire of dense swarms of riflemen. The swarms of riflemen would be themselves the first to be moved down. It is only by the utilization of cover, trees and buildings, walls and ditches, elevations and depressions in the ground, that the infantryman can reach his enemy, now lying, now kneeling, and sometimes standing, he must endeavour, without allowing himself to be seen, to hit the small tiny objects which occasionally offer themselves to him, by his fire to silence that of the enemy, and quickly thereafter to gain new cover to his front, from which he can take up the fight anew. But no matter how many covered positions the battlefield may afford, sooner or later an open space of ground, affording no manner of cover, will spread itself out in front of the enemy. only this space is a narrow one, the attackers will make a quick dash forward and throw themselves on the enemy, shattered by the protracted firing. Should, however, the space be a wide one, the only thing for it will be to dig cover with the spade and, as in fortress warfare, to press forward from trench to trench and, when necessary, under cover of night.

(Compare this statement with our Field Service Regulations, Part I, Opera-

<sup>&</sup>quot;During the process of establishing a superiority of fire, successive fire positions will be occupied by the firing line. As a rule, those affording natural cover will be chosen, but if none exist, and the intensity of the hostile fire precludes any immediate advance, it may be expedient for the firing line to

entrench itself. This hastily constructed protection will enable the attack to cope with the defenders' fire, and thus prepare the way for a further advance, but entrenching by infantry during an attack, when it involves any diminution in the volume of its fire, is only to be employed if further progress has become impossible and an energetic advance must be resumed at the first possible moment "

"A night advance during a battle may be made when it has not been found possible to gain a sufficient superiority of fire during daylight to justify an assault, for the purpose of renewing the fight under more favourable conditions at dawn. Night advances of this nature will often be advantageous against a at dawn. Again wastees of the attractive will often be advantageous against a strongly posted enemy who offers such stubborn resistance as to cause the operations to extend over a period of more than one day. The objective of the advance when gained should be entrenched, so that it may afford a point of support to further progress in daylight. Occasionally, it may happen that an enemy has occupied a position which leaves the assailant little or no scope for manœuvre and has been strengthened to such an extent as to make the success of an attack in daylight doubtful. Under these circumstances a series of advances on successive nights from one fire position to another, may be advisable, each advance being for a few hundred yards only, and each position when gained being entrenched. Such operations approximate to siege warfare and should rarely be necessary or advisable in field warfare except in country where freedom

of manœuvre is very limited.")

It is the business of the artillery to support and assist this advance of the infantry. The artillery should, by means of their fire, ward off the fire of the hostile artillery from their infantry, fighting laboriously forward, search out the hostile infantry in their positions, and smash up the cover behind which they have crawled. To carry out its duties successfully the artillery must endeavour to protect itself against overwhelming hostile fire. But, since it is not so easy to make a gun invisible as it is a man, we are forced back to the protective weapons of earlier times and endeavour to render gun

and rifle fire innocuous by means of shields.

(Compare our F.S.R., Part I, Operations, 1909, 106 (3) " The principle of the employment of artillery in the battle is that the greater the difficulties of the infantry, the closer must be the support of the artillery.

"and F.S.R., Part I, Operations, 1909, 105 (3).

"Artillery Commanders must closely watch the advance of the infantry, and direct their fire against what is for the time being, the most important

target, always remembering that the object of their fire is to assist the infantru advance.")

To enable him to find suitable cover, to deliver a more certain dash forwards against a hardly visible object, and to enable him to get along at full speed in his forward movements, the infantry soldier must have elbow room. Infantry can only fight effectively, not in close order but in extended lines (say about one man to a metre), not in several closely locked-up ranks, but only in one rank. Additional ranks may follow at not too short a distance. They form in closer formations when the cover available admits of it. It is for them to replace casualties, fill up gaps, be prepared for unexpected emergencies, and act as reserve. If it is not, then, desirable to decrease the number of combatants compared with what it has hitherto been, this open formation must lead to extension of frontage. This stretching out of the front will be still more increased if efforts are made to bring as many effective rifles as possible into action. That will be possible notwithstanding the powers of offence and defence of the troops since a few riflemen can now accomplish more than could be done formerly by many. Before the decisive attack with the bayonet takes place, the reserves, who have been following up, must reinforce the leading loose line.

A greater extension of the frontage over which fighting is carried on is the immediate consequence of improved fire-arms. So it has come to pass that, whereas in the battles of the last two centuries (counting all arms and reserves) there was reckoned a total of 10 to 15 men per metre in the battle front, and whereas even 40 years ago 10 men to the pace was considered normal, in the East Asiatic war of 1904-05, three men to the metre was usual, but on occasions that number had to be reduced. Neither of the two opponents had entered upon the war with any hard and fast rules about the extension of the fighting front, nor had either of them taken much trouble about the application of the theories acquired in peace. Force of circumstances and the natural striving after keeping oneself under cover, and at the same time bringing into action the excellent weapons available, have produced the long battle fronts. It cannot be doubted that the phenomena disclosed in the Far East will repeat themselves in a European war. The battlefields of the future will, and must, assume proportions quite different to what we have known in the past. Armies of the strength of those of Königgrätz and Gravelotte St. Privat will occupy more than four times the space of former times. But what will the 220,000 men of Königgrätz, or the 186,000 men of Gravelotte signify, when compared with the masses which are destined to take the field in future wars?

(Compare our F.S. R., Part I, Operations, 1909, 104 (3) \* \* \* The latest experience goes to show that a smaller force than from three to five men per yard on the front on which the decisive attack is to be delivered, will rarely prove sufficient, this force being distributed in such depth as circum-

stances make advisable.",

Forty years ago, the idea of the duty of universal military service was the unique possession of Prussia, and it was not envied by any of the narrow-minded States. Since 1866 and 1870, almost all the great Powers have hastened to possess themselves of this secret of victory. Since that time, whatever is healthy and strong has been impressed for military service. In order to acquire as great numbers as possible, the period of service with the colours has been curtailed as much as possible, while the period of liability to service in war has been prolonged to the utmost. No Power has been able to excuse itself from the rivalry to possess a maximum number of battalions. If any one held back it was at the risk of strangulation.

Seeing that Germany, with a population of 62 millions, represents annually 250,000 recruits with a 19 years liability to war service, and France with its 40 millions of inhabitants produces annually 220,000 recruits with a 25 years liability to service in war, the former has available for war 4,750,000 and the latter 5,500,000 men! But these numbers are more or less imaginary, apart from the casualties occurring during a long course of years. The man who fifteen years ago escaped from the barrack-room to the factory

or the coal-mine, cannot remember much of the tactics which were taught him on the parade ground of his garrison town. The weapon from which the Landwehr man as a recruit fired his musketry course has long ago been turned over to a black warrior of a foreign protectorate. He regards the new weapon placed in his hands with the same distrust that a grenadier of the "old Dessauer" would have exhibited towards a needle-gun. The artisan, who is in the habit of cycling in the morning to his workshop and in the evening back again to his home, would, with difficulty, be able to put behind him daily a distance of from 30 to 40 kilometres, carrying his arms, his ammunition, and his kit. The Landwehr, the Landsturm, the Territorial Army and the Reserve of the Territorial Army, can be added to the strength of the "Nation in Arms" to a very meagre and inconsiderable extent. Of the balance, moreover, a great many will have to be left behind as fortress garrisons and reserve troops. If the conditions of 1870 are taken as a standard of comparison-when the Landsturm was not taken into consideration at all, and the Landwehr only to a very limited extent—and still out of a total strength of 1,200,000 men only some 500,000 took the field, it will be seen that at present we can only reckon on very little more than a million of men. Nevertheless, such an army is a large one in comparison with those of former times; and it is also large for those who will have to command it and direct its movements; in another sense it is small since it will have neither the assurance of superiority as regards weapons (as in 1866) nor of numerical superiority (as in 1870) over its enemy; and it will only be sufficient if it should prove possible to hold these masses together and to ensure their working together for one end. Even if this is successfully accomplished, it is still not indispensible that the total strength of the force should be concentrated on one battlefield, twenty times larger than that of "Königgrätz". We know that the small battle of Dresden consisted of two separate parts; and were there not at Leipsic three distinct battles on the 16th October? And did not Le Mans dissolve into quite a number of independent fights? The issue does not depend upon the result of local engagements, but upon the manner in which these affect the more intimate inter-dependence of events as a whole; so that fighting may go on on one field to gain victory on another. This much, however, is certain that general as well as partial engagements, isolated as well as connected battles, will be fought on fields and over areas which will prodigiously surpass in magnitude the theatres of former military achievements.

(Compare our F.S.R., Part I, Operations, 1909, 105 '5)

the attack more often than not, will resolve itself into a series of distinct engagements, each raging round a different locality, and each possibly protracted over many hours."

and F.S.R., Part I, Operations, 1909, 105

All leaders, down to those of the mullest smith many hours."

All leaders, down to those of the smallest units, must endeavour to apply, at all stages of the fight, the principle of mutual support."

But however expensive the battle-fields may be, they will afford but little for the eye to rest upon. Nothing will be visible on the wide expanse\*. Were it not for the thunder of the guns deafening the ears, the only thing that would indicate the presence of artillery would be faint spurts of fire. It would not be possible to tell from what direction the rolling sound of infantry firing came, were it not for a thin line making occasional dashes forward - up and down, now here, now there, and again vanishing from view with equal rapidity. No horseman is to be seen. The cavalry is obliged to seek its rôle outside the theatre of activity of the other two arms. No Napoleon, surrounded by a glittering suite, is to be seen on a hill. Even with the best field glasses he would not be able to get a view of much. His grey horse would become an easy target for innumerable batteries to aim at. The commander in the field will be found further to the rear in a house with spacious offices, in which telegraph apparatus (aerial and helio), telephone and signalling apparatus are at hand. Crowds of motor vehicles and motor bicycles, equipped for the longest journeys, are waiting in expectation of orders. Seated here, in a comfortable chair in front of a broad table, the modern Alexander has before him on a map the whole battlefield; from here he telephones his ardent messages; and here he receives the reports of Army and Corps Commanders; of captive balloons and dirigible air-ships which are in observation of the movements of the enemy along the whole line and which have his positions in watchful view.

(Compare our F.S.R., Part I, Operations, 1909, 104 (5)
"During an engagement the position of a Commander will depend a great deal on the size of the force he commands. With a small force it may be possible to exercise personal supervision, but with very large forces the Commander-in-Chief should usually be well in rear, beyond the reach of distraction by local events, and in signal communication with his chief subordinates. Subordinate commanders should take up positions where they can obtain a good view of the area in which their commands are operating, and which admit of easy communication with their immediate superior and the units under their command."

These messages will differ from those of former times more particularly as regards the magnitude of the numbers they deal with and less in respect of the nature of their contents. There will be, as there has been for centuries back, a general agreement in their tenour, the enemy has strongly fortified himself, the artillery is suffering heavy losses, the infantry cannot possibly advance further, and strong reinforcements are urgently necessary. The field Commander will not be in a position to yield to these demands. Even if he should have kept in hand a strong reserve at his own disposal, it would quickly be used up, if he were to attempt to comply with all the apparently well-founded calls for assistance from remote parts of the field and from all directions, at distances of many miles and days' marches. Since the fighting can only be carried on by a proportionately limited number of units, the despatch of strong reinforcements (which, having no room allotted them, can find no cover) would only

increase the losses. The real task of the director of the battle is ended when he, long before actual contact with the enemy can take place, has allotted to all the armies and corps the highways, roads and directions by which they are to advance, and has indicated to them approximately the objects to be attained that day. The approach march to the battle begins immediately the troops leave the railway. From the railway stations the Corps and Divisions, some expediting their march, others retarding it, endeavour to reach the places which have been assigned to them in the order of battle.

(Compare our F.S.R., Part 1, Operations, 1909, 102 (3) and 102 (4)—

"The principles upon which the deployment is made will depend upon the Commander's plans. The first object of a Commander who seeks to gain the initiative in battle is to develope superiority of fire as a preparation for the delivery of a decisive b ow. In the case of very large armies, or of an army which possesses a decideo superiority in power\* over its antagonist, the development of one or both of the enemy's flanks. This may be done by continuously extending the front as the enemy's dispositions are discovered until his line is overlapped, or by a converging movement of two † portions of the army, so timed as to bring both simultaneously to the battlefield. Few methods are more effective than the latter, when successful, for it combines the advantages of enveloping attack on the battlefield with a convenient division of the army before the battle. Converging movements, however, demand the most skilful timing and complete arrangements for inter-communication, for any failure may lay the divided parts of the army open to the risk of defeat in detail by an enterprising enemy. In neither of these cases is it usually possible for the Commander to keep a large force in his own hand after he has once decided on his plan of battle and issued his orders. He therefore has little further control when once battle is joined, but he influences the general course of the action by his preliminary dispositions, which determine the direction of the decisive attack, and the force with which it is to be delivered.")

102 (4. "A Commander may also decide to obtain the decision of the battle by manœuvre on the battlefield with a large general reserve which he has retained in his own hand. By keeping a considerable part of his force under control he is in a position to take advantage of an enemy's mistakes and to choose his own moment for striking, but, if this method is to be successful, the size of his army must allow him to keep in close touch with the course of events on the battlefield, and to strike with his reserve at the right place and time. This method will usually be most suited to the circumstances of our

army, and has been chiefly considered in the succeeding sections").

As fighting frontages expand, so also the columns, endeavouring to reach the battlefield, will march with the same frontages, as nearly as possible, as they will occupy in the actual fighting. Concentration for the battle will lose its importance.

(Compare this with our F.S.R., Part J, Operations, 1909, 102 (2).

"Before deploying it will usually be desirable for each column to close up and assume a formation of assembly. When time presses it may be necessary to move units directly from the line of march into their position in the deployed line, but the occasion must be very urgent to justify a Commander in abandoning the advantages, which systematic arrangements for a concerted advance confer"

Those Corps which run up against the enemy will be obliged to fight it out without being able to reckon on any support.

<sup>\*</sup> Or mobility.

Or more.

<sup>†</sup> Note. - Of course the writer means direct support; indirect support will automatically be given when each column strives to accomplish the object directly before it.

Having 144 excellent guns, instead of, as formerly, only 84 indifferent ones, and having 25,000 excellent rifles, each Corps will be in a position to perform ten times the amount of execution which was possible in the days of muzzle-loaders. It is no dissipation of force, but an enhancement of existing strength, for a Corps to occupy three times as much front as 40 years ago. With such a fighting front it is still quite feasible to maintain one's own in the fight. make good losses to the extent of 50 per cent, and yet have a reserve in hand for the final assault.

It will doubtless be a slow business, and it will be a fatiguing one—this fighting forward from cover to cover, this crawling advance up to the enemy, this holding out to the end, this constant state of

preparedness to ward off a counter-attack.

Not every Corps will be in a position to participate in the battle on the first day. At Leipsic the evening of the third day had arrived before the last Corps of the Allies appeared even in the neighbourhood of the scene of the battle. In the second half of the war of 1870-71, battles of several days' duration were the rule. as at Orleans, Le Mans, etc. The battles of the future will also demand of the masses of troops spread over great areas, a correspondingly long duration of several, or rather of many days, even if they do not extend to fourteen as at Mukden. On every fresh day the field Commander will encourage those Armies and Corps already engaged. to fresh exertions, preserving those not yet committed in their march formations or indicating to them any change of position that may have become necessary.

These protracted battles will, by no means, be more bloody than those of earlier times. The daily battle casualties in the East Asiatic war amounted to only from 2 to 3 per cent, as against from 40 to 50 per cent in the days of Napoleon and Frederick. The fourteen days of Mukden cost the Russians, as well as the Japanese, less than the few short hours of Mars la Tour cost the Germans and French.

The Russo-Japanese war showed that a purely frontal attack on a hostile position may very well be successful. But the consequences of such an attack are, even in the most favourable circumstances, only meagre.

(Compare our F.S.R., Part I, Operations, 1909, 103 (2).

"A Commander should consider what parts of an enemy's force can be attacked with most prospect of success, and choose as the objective of the decisive attack that part the defeat of which will give the greatest results. This will usually be one or other of the enemy's flanks".

The enemy may certainly be driven back, but after a time he repeats, on another site, the opposition which he had temporarily given up. The campaign drags itself along. But such wars are impossible in our time when the existence of the nation is founded on the uninterrupted progress of trade and industry, and the machinery which has been brought to a standstill has to be again got into motion by means of a quick decision. Any half-hearted strategy is inadmissible when the maintenance of millions demand the expenditure of milliards. But to attain a decisive and annihilating success an attack from two or three sides, as well as against the front and against one or both flanks, is requisite. Such an attack is comparatively easy for those to carry out who find themselves in possession of superior numbers. But such a superiority is not under

existing conditions, to be reckoned upon.

(Compare again our F.S. Regulations, Part I, Operations, 1909, 102 (3) and (4). "The principles upon which the deployment is made will depend upon the Commander's plans. The first object of a Commander who seeks to gain the initiative in buttle is to develop superiority of fire as a preparation for the delivery of a decisive blow. In the case of very large armies, or of an army which possesses a deciled superiority in nower over its antagonist, the development of fire effect is usually facilitated by aiming from the outset at the envelopment of one or both of the enemy's flanks. This may be done by continuously extending the front as the enemy's dispositions are discovered until his line is overlapped, or by a converging movement of two portions of the army, so timed as to bring both simultaneously to the battlefield. Few methods are more effective than the latter, when successful, for it combines the advantages of enveloping attack on the battlefield with a convenient division of the army, before the battle. Converging movements, however, demand the most skilful timing and complete arrangements for inter-communication, for any failure may lay the divided parts of the army open to the risk of defeat in detail by an enterprising enemy. In neither of these cases is it usually possible for the Commander to keep a large force in his own hand after he has once decided on his plan of battle and issued his orders. He therefore has little further control when once battle is joined. but he influences the general course of the action by his preliminary dispositions, which determine the direction of the decisive attack and the force with which it is to be delivered

(4) A Commander may also decide to obtain the decision of the battle by manœuvre on the battlefield with a large general reserve which he has retained in his own hand. By keeping a considerable part of his force under control, he is in a position to take advantage of an enemy's mistakes and to choose his own moment for striking, but, if this method is to be successful, the size of his army must allow him to keep in close touch with the course of events on the battlefield, and to strike with his reserve at the right place and time. This method will usually be most suited to the circumstances of our army, and has

been chiefly considered in the succeeding sections.")

The means for strong flank attack can only be made available by making the force operating against the hostile front as weak as But, however weak that may be made, it cannot be so weakened as to be brought to a standstill and "occupy" the enemy by long-range fire or merely "contain" him. The front must be "attacked" under all circumstances and the advance against the front must always go "forward."

(Compare our F.S.R., Part I, Operations, 1909, 103 (3).

"The objective of the decisive attack should be struck unexpectedly and in the greatest possible strength."

greatest possible strength."
and F.S.R., Part I, Operations, 1909, 105 (4).

"In order to prevent the enemy from thinning his line so as to reinforce the point against which he expects the decisive attack will be directed, and to force him to use up his reserves, it will be absolutely necessary for the troops to whom the role of wearing down the enemy's resistance is allotted to act with vigour. No half measures will succeed. The enemy must be deceived, and this will call for as much self-sacrifice and devotion on the part of these troops as will be required from those taking part in the decisive attack

""".

In addition, it has been found that the quick firing, long-range rifle can take the place of several of the earlier rifles, and that it can respond to all demands made upon it, if only the necessary ammunition is forthcoming. Instead of heaping up reserves behind the front,

which must remain inactive, and whose absence from the decisive point is felt, it is better to give heed to the question of the supply of ample ammunition. Ammunition brought up in motor wagons affords the best and the most reliable of reserves. All troops who would otherwise have been kept well in the rear with a view to being available for the decisive moment, must now-a-days from the very beginning be pushed forward to a flank attack. The stronger the force is, which can be brought up for this purpose, the more decisive will the flank attack be.

(Compare again our F.S.R, Part I, Operations, 1909, 102 (4).

"A Commander may also decide to obtain the decision of the battle by manceuvre on the battlefield with a large general reserve which he has retained in his own hand. By keeping a considerable part of his force under control, he is in a position to take advantage of an enemy's mistakes and to choose his own moment for striking, but, if this method is to be successful, the size of his army must allow him to keep in close touch with the course of events on the battlefield, and to strike with his reserve at the right place and time. This method will usually be most suited to the circumstances of our army, and has been chiefly considered in the succeeding sections.")

But in order to attack a hostile flank it is necessary to know Hitherto the cavalry would have been charged with where that is.

the determination of the point.

(Compare our F.S.R., Part 1, Operations, 1909, 92 (1).

Tactical reconnaissance is one of the most important duties of the protective cavalry, who when touch with the enemy is gained will assume a vigorous offensive, drive in the enemy's advanced troops, and discover his dispositions and intentions.

It is to be expected that this task will, in the future, be allotted to a fleet of dirigible air-ships, which, from above, will be able to see better than cavalry, impeded in its work of looking around by hills, woods and townships.

(Compare our F.S.R., Part I, Operations, 1909, 95 (1), (2).—

"The technical billoon officer should be told what information it is desired to obtain, and given as free a hand as possible as regards time and place of ascent. The observers should be fully acquainted with the situation and provided with the best maps and glasses procurable.

(2) Captive balloons and kites may be employed: -

(i) To obtain information of the enemy's position and of the movements of any considerable bodies of troops, when in such close touch that the cavalry can no longer make progress.

(ii) To obtain targets for and direct artillery fire.

(iii) To ascertain the position of our own troops on the field of battle iv, To ascertain the nature of the ground to the front or to a flank.")

But as cavalry, before it can complete its work of exploration, must first of all drive the hostile cavalry from the field, in the same way will the air-ships be obliged to fight a battle with their similarly equipped antagonists in the upper regions.

(Compare our F.S R., Part 1, Operations 1909, 91 (1).-

To obtain for the Commander-in Chief the information he requires is the first duty of the independent cavalry, which will push into the zone separating the two armies in the direction in which it is desired to reconnoitre. In this area the hostile cavalry will usually be operating; and until it has been disposed of, the independent cavalry will find it difficult to obtain satisfactory information recarding the enemy's columns.

Happy then will be the lightly constructed aerostat which is successful in mounting higher than its rival, slinging down the annihilating explosive on its more deeply floating antagonist, and then getting way to a distance with all speed to escape being caught in the ascending flames.

The cavalry, relieved from its present duty of exploration, will attempt to carry to the rear of the enemy the fire at its disposal in

its artillery, its machine-guns, and in its long-range carbines.

(Compare our F.S.R., Part I, Operations, 1909, 106 (2).

"As the crisis of the battle approaches and the enemy becomes morally and physically exhausted, the chances of successful cavalry action increase. For effective intervention, the concentration of as large a part of the cavalry as possible is required, the rest depends chiefly upon the Cavalry Commander, who should be where he can best watch the progress of events, keep in touch with other Commanders, and carry out the instructions of the Commander-in-Chief, with whom he should be in signal communication (if possible by telephone). When a favourable opportunity for cavalry action arises, it must be seized at once; but it is important that the result should promise to have a direct influence upon the decision of the battle, and that cavalry should not be exposed to heavy losses and horses be exhausted on minor enterprises. The attacking infantry should take immediate advantage of the results of the cavalry action.")

There will be no change in the obligation resting upon the cavalry of attacking any hostile cavalry which it may encounter on its way and overcoming it, before it can rightly set itself to the accomplishment of its proper task. For in these matters things will remain unaltered in the future -to a greater or less extent, in the first place, artillery will be directed against artillery, cavalry against cavalry, and air-ship against air-ship, before all can combine to

assist the infantry towards final victory.

The battles of the future will not, however, run their course so At the close of the war of 1870-71, France and Germany, to protect themselves on the one hand from a fresh invasion, and on the other from a campaign of revenge, constructed fortresses on their common new frontier. The latter confined herself to the fortification of the newly-acquired places of Strasburg and Metz. The former erected an almost unbroken barrier along the upper Moselle and the Meuse, which was intended to cover her whole Eastern frontier between Switzerland and Belgium. Her neighbour was placed in a difficult position. Although she was free from all designs of conquest, she could not calmly look on while a revengeful enemy awaited, in the security of her strongholds, a favourable opportunity for making an irruption against her. The best form of defence is the attack.

(Compare our F.S.R., Part I, Operations, 1909, 99 (1).—" Decisive success in battle can be gained only by a vigorous offensive." and Sect. 100 (1).-

if victory is to be won, the defensive attitude must be assumed only to await or create a favourable opportunity for decisire offensive action.

To apply this means in case of need, Germany was obliged to keep her hands free. It was of no avail, as was proposed, to oppose a line of fortresses to a line of fortresses, and so she sought to create for herself a new tool of attack. Heavy artillery with an explosive shell of hitherto unknown effects was provided which neither walls nor casemates were supposed to be capable of withstanding. The secret was not long kept. On the other side of the frontier similar annihilating projectiles were invented. Since that

time, on both sides a long, embittered, and by no means yet extinguished, battle between the engineer and the artillerist set in. latter is always discovering new, larger, and more accurate guns, and more effective projectiles, the former is always opposing to them works more capable of resistance. This struggle the neighbouring Powers were as unable to remain indifferent to as they were in the matter of the rifles and the field guns. It was everywhere taken for granted that peaceable Germany was contemplating a campaign of plunder in the smiling plains of the Seine and the If, indeed, the direct road thereto was barred to her, it was nevertheless assumed that she would seek to find a way round the unpleasant obstacles through Switzerland or through Belgium. To anticipate such an attack on her right wing, France has from time to time closed all the passes over the Jura with works. On the left Belgium came to her aid. She has cut off the great international highway along the Meuse and the Sambre with commanding positions and shielded towers, and has erected behind Antwerp an impregnable bulwark. The Netherlands endeavoured to support the efforts of their neighbour according to their power, in order to protect themselves as well as France from German aggression. But even this was not sufficient. Italy had not long ago lost several provinces to France. It was assumed that she would make use of an attack by Germany on France to recover the lost provinces. All roads and tracks over the dividing highlands must therefore be barred to her. Italy saw in the French fortifications not a means of defence but a threat, and she hastened to set up opposite each fort, each battery, and each earthwork, a corresponding one, and to erect opposite the entire system of fortifications on the west side of the Alps, a similar system on the east side. Hardly had two decades passed away since the Franco-German war before a Chinese Wall, extending from the Zuyder Zee to the Mediterranean, was set up, with the ostensible object of preventing any repetition of that calamitous invasion.

It was still conceivable that the Italians on one side of the Chinese Wall might throw in their lot with the German allies beyond the Alps, and that their combined forces, like a river overflowing its banks, would pour into the coveted land over fortresses and sweeping away million-strong armies on their way. In this pressing danger, Switzerland did not lose any time in coming to the rescue. The passes of the St. Gothard, the approaches through the Rhone and Rhine valleys, all paths between impassable glaciers and heaven-aspiring giant mountains were barricaded by fortresses. and posts amid the eternal snows were occupied by garrisons. putative lust of conquest, to which on one side an effectual barrier had been opposed, would of necessity be obliged to seek another atmosphere. If Germany was prevented from marching on Paris, it became obviously necessary that she should take the high road to Moscow. Russia felt herself compelled, therefore, to erect fortresses against Germany. Streams, rivers, and swamps, made the project an easy one. The German provinces beyond the Vistula were forthwith enclosed by a broad marshy canal. The few approaches over it were defended by walls and guns. It was of course self-evident that similar measures of defence should be taken against Austria, which was allied with Germany. So, just as the three allied States were parted from the rest of Europe by a Western line of forts, in like manner were they hemmed in by an Eastern line of obstacles. In the north, Denmark has created a great stronghold out of Copenhagen and has assumed charge of the entrance to the Baltic. England possesses a powerful floating fortress which she can at any moment erect in the North Sea, and she has assured for it, by means of a harbour in Jutland,\* a way of approach to Schleswig.

The erection of so many frontier fortresses has proved so infectious in its operation, that at last Italy has fortified herself against the allied Austria, and Austria has fortified herself against Italy. The iron ring which has been forged round Germany and Austria remained open only on the side of the Balkans. But this gap also has now been filled up by Turkey, Servia and Montenegro, while Bulgaria and Roumania have been pressed into the Austrian camp.

Such is the military condition of Europe. In the centre, and unprotected, stand Germany and Austria; and round them, behind ramparts and ditches the remainder of the powers. political situation corresponds to the military one. the encompassing and the encompassed Powers there are points of difference which are difficult to remove. France has not yet abandoned the revenge she swore to in 1871. As this idea of revenge has kept the whole of Europe under arms, so also does it constitute the cardinal point of all politics. The tremendous increase in her industries and her trade has procured for Germany an additional implacable foe. Hatred for a formerly esteemed competitor can neither be toned down by assurances of devoted friendship nor aggravated by impassioned oratory. It is not sentiment, but debit and credit, that indicates the intensity of the animosity. In the same way Russia, by the inherited antipathy of the Slavs towards the Teutons and her traditional sympathy with the Latins, is bound fast to her old ally and (owing to her need of loans) throws herself into the arms of the very Power which can do her most harm. excluded from all expansion westwards, is convinced that there is not yet an end to the oppression of the foreigners who once descended over the Alps to the fruitful plains of Lombardy. She is unwilling to tolerate it either on the southern slopes of the mountains or on the shores of the Adriatic.

It is not contended that these passions and covetous feelings will translate themselves into strong action. But the emulous desire on the part of these Powers, to conduct a common attack on the

<sup>\* (</sup>Note.—This refers to a political speech made in England in 1905 to the effect that we were prepared, under certain eventualities, to land a force of 100,000 men in Schleswig—Colonel Drake.)



centre, is ever present. At any given moment the gates may be thrown open, the drawbridges let down and million-strong armies may stream in over the Vosges, the Meuse, the Königsau, the Niemen, the Bug, and at the same time across the Isonzo and the Tyrolean Alps, subjugating and devastating. The danger appears gigantic. It appears of smaller dimensions when viewed more narrowly.

England cannot destroy Germany's trade without seriously injuring her own. It is well understood that it is to her advantage to allow her detested rival (who is, however, at the same time her best customer) to live. Before she carries into execution the advertised landing in a Jutland haven, she will have to await telegrams from Africa, India, East Asia and America. If she sets the world ablaze, she will have something better to do than, according to the Bismarckian prescription, allow her army to be arrested in Schleswig. Russia, when in full possession of her power and strength, withstood the allurements of her ally to attack us. It is doubtful whether Russia, having learned the nature of modern war, can see anything seductive in such an attack. France has laid it down as a rule for herself to postpone the enjoyment of her revenge (grown somewhat cold) until she can do so in the company of good friends. All have misgivings about the tremendous cost and possible great losses, which form the red spectre in the background. The duty of universal military service, which will consume as food for powder rich and poor, high and low alike, has toned down the rage for fighting. fortresses deemed impregnable, behind whose shelter one feels warm and secure, make it appear less fascinating to charge out into the open and expose one's breast in battle. Arms factories, gun foundries, and steam hammers for hardening the steel of shielded towers have brought about more friendly faces and more amiable intercourse than all the Peace Congresses have been able to accomplish. Every one has to think twice before attacking a well-armed and numerically strong neighbour, and hesitates to put in motion the destruction-carrying appliances which he has constructed for himself with so much pains but which he doubts if he thoroughly understands how to use. And even if he is satisfied on all these points and all difficulties are removed, and if the resolution is taken to begin the mighty approach march from all sides, there makes itself unmistakably heard in every breast the anxious question—Will "the others" also come? Will the distant allies put in an appearance at the right time? Or will I not be exposed, alone and for saken, to the club-like mauling of a more powerful antagonist? These misgivings compel him to stand fast, to wait, to postpone his revenge, and to return to the scabbard the already loosened sword.

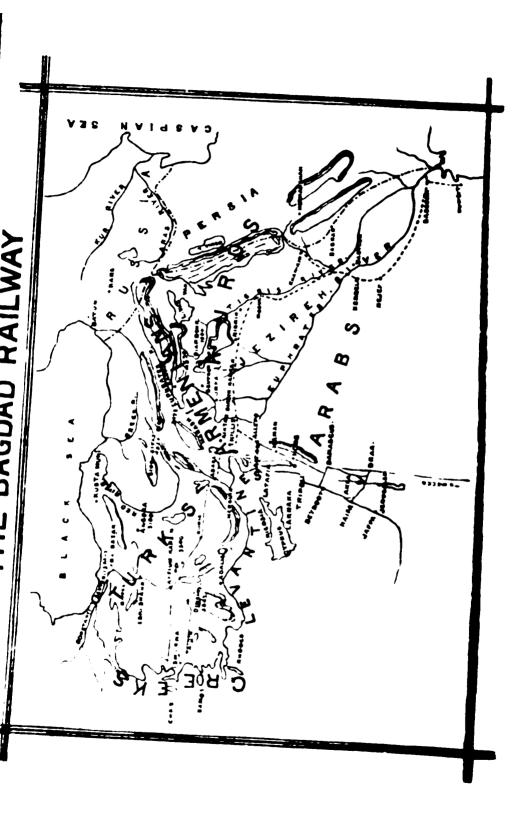
"The coalition is ready" is being shouted over from the further side of the Channel. In spite of that, however, it is still doubtful whether actual hostilities will ensue, and it is by no means necessary as a preliminary. The positions which the Allied Powers have taken up are so well chosen that their very existence constitutes a

permanent menace and they automatically affect the German nervous system, already shaken by economic strife and trade crises. To escape from this obsession we are obliged to yield points to accommodate ourselves to circumstances, and to allow one advantage after

another to slip through our hands.

. While this kind of struggle is going on, suddenly the scene has changed. By the latest occurrences in the Balkan Peninsula, Austria finds herself indefinitely hemmed in on that side. She demands the support of her ally, but cannot guarantee her any support in return. The tactics of the adversaries have succeeded in assigning to each of the two a separate theatre of war, and in preventing them from over-throwing first one end then another of opponents by united annihilating preponderance. Austria must face the South. Germany must turn towards the West. Russia reserves for herself to give the decision with her full strength on one side or the other.

Although the situation has become so very favourable to them, the enemies all round us do not seem in any hurry to take up arms. There are many considerations still undecided. Even after being separated, Austria and Germany are still too strong. The next step will therefore be to weaken them by sowing discord between them. In Austria the strife of the nationalities is being energetically stirred up by the friendly offices of diplomacy, by deputations inciting to fight, and by the battle cries of the press. It has already been shown not long ago how, in Germany, the same object may be accomplished by a short magazine article containing cunningly pieced together out-of-date accusations. And, therefore, what is required for the further fighting (whether it be conducted weapon in hand or by other means) is a "nation of brothers" as well as a large, powerful and mighty army, led by one firm hand and animated with unbounded confidence.



# THE BAGDAD RAILWAY.

# A Lecture to the Kohat Garrison, January 25, 1909.

BY CAPTAIN L. E. HOPKINS, R.E.

GENERAL RAMSAY AND GENTLEMEN, —First of all I propose to describe the history and geography of the various projects for a Bagdad Railway, then I shall explain the aims and ambitions of the Sultan and the Germans in constructing the lines now proposed and, finally, I shall go over the commercial, strategical and political aspects

of the question.

A railway to connect the Mediterranean Sea with the Persian Gulf was first proposed by the British Government in 1835. Their idea was to obtain a quicker line of communication with India than was afforded by the Cape route or even by a line across the Isthmus of Suez; for in those days when steam-ships were no faster than sailing ships, the Red Sea route would have been much slower than a Euphrates railway. They sent out an expedition under General Chesney which made a detailed survey of a line from Alexandretta to Busra along the Euphrates Valley.

Nothing further was done till 1854, when a company was formed in London to carry out Chesney's project, and Sir John NcNeil was appointed Director. Some detailed surveys were made by him but little else was done as the Company could not raise the capital.

In 1872, the approaching completion of the Suez Canal again brought to the front the Euphrates Valley Railway. The question of putting our money on the Suez Canal or in a Euphrates Railway had to be decided, and the British Government appointed a Parliamentary Commission to enquire into the whole question and eventually decided to drop all ideas of a railway and purchase shares in the Suez Canal from the Khedive, of the value of £4,000,000 Sterling. From that date the interest of England, politically, in the Bagdad Railway ceased. Our railway communication across Egypt still further discounts the value of the Bagdad Railway for us.

Meanwhile Baron Hirsch had taken in hand the line connecting Belgrade with Constantinople, and the Turkish Government then took up the idea of extension of railways into Asiatic Turkey. They appointed an Engineer, Von Pressel, who had built the Brenner Pass Railway in Austria and had been employed by Hirsch to report on the whole question. He and his assistants Topouz and Czernik, made reconnaissances all over Asiatic Turkey and recommended a main line from the Bosphorus through Sivas, Diarbakr, Mosul and Bagdad with a branch to Konia and connections with the sea from Sivas to Samsun and from Diarbakr to Swediyeh. He said that all these lines would be profitable if built by the State on

a metre gauge, and not by the system of Kilometric guarantee which had only resulted in the over capitalisation of the Oriental Railways and the benefit of Baron Hirsch's Company. The Porte began constructing these lines, but on the standard gauge, but railhead had only reached Ada Bazar when the outbreak of the Russo-Turkish War of 1877, put a stop to further railway extension. From 1880, German influence in Constantinople began to increase; German Officers reorganised the Turkish Army and German firms supplied whatever armaments and munitions of war were required by Turkey. Finally, in 1888, a German Company took over the Haidar-Pasha-Ismid Railway and extended it to Angora. In 1893, they obtained a further concession to extend the Angora line to Sivas and Diarbakr and Bagdad, with a branch to Konia, as had been recommended by Von Pressel. The line to Konia was opened to traffic in 1896 but the extension to Angora was not proceeded with.

We now come to the Bagdad Railway Convention of 1903, about which the Germans have been so enthusiastic. The full text of the Convention will be found in Valentine Chirol's "Middle Eastern Question" with a quantity of other interesting information relating to the subject, which I will assume that you have read. He also discusses at length the reasons why England should have no connection with the Bagdad Railway, though I do not think there was ever much danger of the British Government re-opening a subject which they abandoned finally when the Suez Canal was opened in 1875. On the other hand British capitalists were quite able to see for themselves the speculative nature of the undertaking, and, although they might lend money to German Banks, or use their money to construct railways in Turkey, are hardly likely to lend money to Germany to build railways in Turkey. There are plenty of better openings for spare British capital. Chirol's conclusions on the commercial prospects of the line are given without sufficient argument and, as he is inclined to discover dark designs of Machiavellian ingenuity in the simplest arrangements, are in some respects unsound. As an instance of this tendency, he speaks of the prosperity of the Smyrna-Aidin Railway being due to an "intelligent system of short lateral feeders" the simple explanation of their shortness being that the line lies in a narrow valley where long branches are a physical impossibility. In the second volume of "Persia," Lord Curzon dismisses the subject in a few words in his inimitable manner. He says that he studied the Bagdad Railway "carefully" both at Busra and Beyrout and came to the conclusion that, owing to the tremendous initial outlay, the line could not pay, and then adds that owing to the high temperature in the desert "I decline to believe that during half the year any General would consent to pack his soldiers into 3rd class carriages for conveyance across those terrible 1,000 miles, at least if he anticipated using them in any other capacity than hospital inmates at the end." Even if Lord Curzon studied the whole ground carefully, his opinion on the probable cost of the line would not be of much value, but it would puzzle the most

experienced Engineer to estimate the cost of the Bagdad Railway from the deck of a steamer in Beyrout Harbour. Lord Curzon's views on the Military use of the line are equally helpful. The heat to be experienced en route would be no worse than on a journey between Lahore and Karachi, and if troops in 3rd class carriages could not

stand it, they would be equally unable to do so in firsts.

The alignment proposed for the railway is well known. Briefly, the Convention of 1903 provides for the extension of the line from Konia by Eregli to Adana, thence over the Bagche Pass to Killis and then across the Euphrates to Harran, Nisbin and Mosul. From Mosul the line follows the right bank of the Tigris to Bagdad. From Bagdad it leaves the Tigris and re-crossing the Euphrates, passes by Kerbela and Nejef, the tombs of Hussain and Ali and reaches the port of Busra. From Busra it was proposed to extend the line to Koweit. Branches are to run from near Bagdad to Khanikin, from Killis to Aleppo and from Harran to Urfa. The only works of any difficulty are the passage of the Taurus and Amanus mountains and the crossing of the Euphrates.

The line is to have a gauge of 4 ft. 8½ inches and will connect at Aleppo with the existing Aleppo-Rayak line. At Rayak there is a break of gauge at the junction with the Beyrout-Damascus line which is two inches wider than a metre and which connects at

Damascus with the line to Medina on the same gauge.

The Porte pays for the line by what is called a Kilometric guarantee. Practically, this means that the Germans raise the money and build the line, and as soon as they open each section to traffic, they receive from the Porte 4 per cent Bonds to the value of 269,110 francs per Kilometre. This means that they have agreed to construct the line for rather less than this amount (deducting a certain sum for a sinking fund). The average cost will probably be actually less than half this sum. They also receive 4,500 francs per Kilometre per annum for working expenses.

The concession in theory expires in 1911 but, as Chirol points out, is so loosely worded as to time limit that there is practically no

limit.

The Company is bound to employ Turkish subjects, except for

superior staff and employées must wear the fez.

All railway materials and coal are to be imported free of duty and the Company can put their own steamers on the Tigris to bring up materials to Bagdad.

The plans and equipment of the line are subject to Government

inspection and approval.

The line has been so far extended up to Eregli and opened for traffic in 1905, and it is believed that surveys are in progress for the next section. Meanwhile, the Company has bought up the Mersina-Adana Line and acquired control of the Smyrna-Kassaba Line. Smyrna will be the port for the railway and not Constantinople, which, though a splendid harbour, is poorly equipped and cramped for room on land and, moreover, it is too close to Yildiz Kiosk to

thrive. Smyrna, on the other hand, is a thriving port with many modern conveniences.

I now come to the objects of the Sultan and the Germans in building the line, and will discuss how far these aims are likely to be achieved. When the German Syndicate had carried their line as far as Konia and Angora in 1896, they appear to have realised that there was little profit to be made from railways in Asiatic Turkey. This, however, did not suit the Sultan. He and the Turks rule over a country extending from the Bosphorus to the Persian Gulf and Arabian Sea, with an extremely mixed population. are the ruling race in Turkey, in much the same position as we are in India, but under very different conditions. While in India we have many races of a very mild disposition, the Turks have to keep in order, Kurds, Armenians, Arabs, Syrians, Druses and in addition a mixed population of religions, Nestorians, Druses, Chaldwans, Jacobites, Armenians and Greeks, all Christians and a number of Mahomedan sects. They have no railways and roads by which means we in India are able to govern a population out-numbering us by 3,000 to 1. The Turk is a fine man, almost a white man, but as a rule slow-witted. The Arabs and Kurds live in a perpetual state of war. The Kurds resemble Pathans, but have more courage and fewer vices. The Armenians could learn nothing from Bengalis in sedition, and where they have not been crushed are also fighting men. The Sultan realised that in order to obtain full control over this heterogeneous population of his Asiatic Empire, he must have railways. His power is maintained by his army, which at present is scattered among the army corps of Bagdad, Syria, Kurdistan and Hejaz and, of course, if connected up by railways, these corps are in as good a position as if concentrated at He has succeeded in building his line to Hejaz as a State line assisted by contributions from Mahomedans all over the world, who were led to subscribe by judicious play on their religious feelings about the ancient pilgrim route which the line follows and replaces. This line is not nearly so important a route for pilgrims as is the Bagdad-Mecca-Jeddah route, and is more valuable to the Sultan than to the pilgrims.

There remained his main line from Konia to Bagdad. At this point the Kaiser comes on the scene, full of ideas of a German colonization of Anatolia and Mesopotamia, and fully confident in his capabilities as a Financier and Railway Engineer. Flattered by the Sultan into thinking himself a new Oriental Badshah, and backed by a crowd of Professors from German petty Universities who flooded the country with pamphlets on the German colonisation of Asia Minor, he succeeded in inducing the German Syndicate to make proposals for the extension of the line to Bagdad. These provincial University Professors belong to that small section of the German Nation who have caused, by their writings, so much bad blood between England and Germany. They seem to be of the same breed as the Bengali Professor, full of book learning but absolutely innocent of any practical

common-sense. I will quote some of the rubbish they have produced about the Bagdad Railway.

Dr. Hans Poeschel in the periodical Asien, the organ of

the German Asiatic Society, writes:-

"Whilst the French guns in Morocco are audibly preaching to all the world how serious it is for France to create for herself a secure sphere of influence in a territory around which Pan-German dreams of the future had spun their threads with longing, we see England and Russia settling a treaty by which, too, without a doubt, German interests in the East will be touched in a vital spot. Russian concessions in Persia in return for English grants in Turkey. that will form openly or secretly a considerable part of the contents of that treaty." What possible interest can Germany have in the Anglo-Russian agreement? He continues: "But it is known how strongly interested Germany is, now and in the future on the development of affairs in Turkey. Our Trade which, with Turkey, in 1885, was still represented by the modest sum of £550,000 has multiplied elevenfold in 20 years; it already, in 1905, amounted £6,100,000, of which more than half comes from Turkey and a wider greater climax is expected when the ambitious German plans and hopes in Anatolia are realised."

The following is a statement of the pecuniary interest of Germany in Turkey compared with other countries. Although England's interest in Turkey is never supposed to be important, still it amounts to more than that of Germany. The value of Germany's trade with Turkey is less than half that of the port of Karachi.

Foreign capital invested in Turkey 1907:—

				French.	English.	German.
_				£ 220	£	
Loans	•••	•••	•••	<b>56,670,220</b>	20,000,000	15,521,692
Banks		•••	•••	6,000,000	5,000,000	840,000
Railways	•••	•••		<b>22,2</b> 13,261	4,234,634	17,791,540
Tobacco Regie	•••	•••		960,000	•••	480,000
Harbours and V	Vharves			2,995,000		720,000
Mines	• • •	•••	•••	1 222,000	290,000	•••
Miscellaneous	•••	•••		880,000	875,000	65,000
Trade 1906		•••		8,705,000	14,824,000	0.255,000
a value of ship	ping eg	naged in T	urkish		, ,	-, ,
trade		•••	•••	321,290	3,346,290	215,6 <b>25</b>
		Total	•••	£99,966,771	£48,570,198	£41,888,857

He finishes by saying that "Since the fall of Napoleon III, the Turks have come to look upon Germany as their natural protector and the prestige of Germany's victories in 1870 has made a very favourable impression. The German name has earned a special value in the East, and the most popular Christian Prince in Turkey at the present moment is our Kaiser. The International race for the markets of Asia Minor is now being run but the railway has given us Germans a start before all comers." The special value set on the German name in Turkey is quite correct, but it is only

#### THE BAGDAD RAILWAY.

# A Lecture to the Kohat Garrison, January 25, 1909.

BY CAPTAIN L. E. HOPKINS, R.E.

GENERAL RAMSAY AND GENTLEMEN,—First of all I propose to describe the history and geography of the various projects for a Bagdad Railway, then I shall explain the aims and ambitions of the Sultan and the Germans in constructing the lines now proposed and, finally, I shall go over the commercial, strategical and political aspects of the question.

A railway to connect the Mediterranean Sea with the Persian Gulf was first proposed by the British Government in 1835. Their idea was to obtain a quicker line of communication with India than was afforded by the Cape route or even by a line across the Isthmus of Suez; for in those days when steam-ships were no faster than sailing ships, the Red Sea route would have been much slower than a Euphrates railway. They sent out an expedition under General Chesney which made a detailed survey of a line from Alexandretta to Busra along the Euphrates Valley.

Nothing further was done till 1854, when a company was formed in London to carry out Chesney's project, and Sir John NcNeil was appointed Director. Some detailed surveys were made by him but little else was done as the Company could not raise the capital.

In 1872, the approaching completion of the Suez Canal again brought to the front the Euphrates Valley Railway. The question of putting our money on the Suez Canal or in a Euphrates Railway had to be decided, and the British Government appointed a Parliamentary Commission to enquire into the whole question and eventually decided to drop all ideas of a railway and purchase shares in the Suez Canal from the Khedive, of the value of £4,000,000 Sterling. From that date the interest of England, politically, in the Bagdad Railway ceased. Our railway communication across Egypt still further discounts the value of the Bagdad Railway for us.

Meanwhile Baron Hirsch had taken in hand the line connecting Belgrade with Constantinople, and the Turkish Government then took up the idea of extension of railways into Asiatic Turkey. They appointed an Engineer, Von Pressel, who had built the Brenner Pass Railway in Austria and had been employed by Hirsch to report on the whole question. He and his assistants Topouz and Czernik, made reconnaissances all over Asiatic Turkey and recommended a main line from the Bosphorus through Sivas, Diarbakr, Mosul and Bagdad with a branch to Konia and connections with the sca from Sivas to Samsun and from Diarbakr to Swediyeh. He said that all these lines would be profitable if built by the State on

necessary to go to Turkey to find out it is a low value. Who are the other competitors in the race? "It looks indeed as though Providence which has already bestowed the rest of the world in other hands has reserved for Germany this Garden of Eden between the Tigris and Euphrates. It remains for German pluck, tenaciousness and enterprise to turn it into a paradise." Quite so, but it

will require a liberal supply of those qualities to do so.

Dr. Hugo Grothe wrote a pamphlet on the Bagdad Railway and Thoughts on the Colonisation of Mesopotamia, in which he tries hard to prove that Mesopotamia, which has a climate similar to that of the Punjab, is suitable for colonisation by Germans. climate of Chaldea is like that of Scinde. Siegmand Schneider writes in much the same strain, and talks of highways of the world's commerce and the Bagdad Railway. Dr. Paul Rohrbach and many others contribute to the chorus.

They all realised that England's greatness is due to her Colonies, and urge an imitation of her Colonial policy. They have opened a Colonial school in which they hope to turn German hobbledehovs into full-blown Colonials. The Emperor no doubt, for his part, realised the strategical importance of the line but failed to see that it would belong to Turkey, and that the Sultan and the Turks will not have the Germans in Turkey at any price and are quite strong

enough to resist any schemes of peaceful penetration.

Urged on by the Kaiser and this crowd of enthusiasts, the German owners of the line to Konia made an agreement with the Porte, known as the Bagdad Railway Convention of 1903. But they have made as good a bargain as possible, and looked at as a speculation the terms they have been given are not unfavourable. The 4,500 francs per Kilometre per year for working expenses, will more than cover the expenditure and as the average cost of the line is not likely to exceed 125,000 francs per Kilometre, the guarantee of 11,000 francs will give them a return of about 9 per cent on their capital. For the first section they raised capital at the rate of 75,000 francs per Kilometre, on which the guarantee gives them 15 per cent interest.

Note. Looking at it in another way, if the company stop further construction, they might borrow at 10 per cent on their 4 per cent Bonds and so make a cash profit of £259,680. Von Gurnner, in the Nineteenth Century, in reply to David Fraser, says they will put £240,000 of this into rolling stock and reserve for the next section. Methinks

he doth protest too much.

One of the clauses of the agreement forces the company to construct the line to Bagdad before touching the work between Bagdad and Busra. Chirol says that this is done by the Germans in order to prevent the English getting any benefit from the railway; that the trade of Bagdad is now entirely in British hands and that the Germans hope to displace them by the railway from the North. This is simply Germanophobia. The only explanation is that the Sultan wants the line made to Bagdad to connect up with his Bagdad Army as soon as possible, and further extension beyond Bagdad does not interest him in the least.

The alignment was chosen, Chirol says, through Konia and Aleppo instead of by Sivas and Diarbakr, as a result of Russian intervention. He says that Russia objected to a line so near her frontier as the projected branch from Sivas to Erzeroum. The same story, which seems to me far fetched, is repeated in German pamphlets.

The real reason is the one given by the Germans when they abandoned the extension from Angora in 1893, that the country was too difficult. The line would have to cross three passes from 4,000 to 6,000 feet high and, from Angora to Mardin a distance of 550 miles, the whole country is mountainous and difficult for a railway. No Russian Government would be so foolish as to object to a railway from Sivas to Erzeroum and connecting with their railway system at Kars, for the following reasons. The frontier is, at present at least, 40 day's march from Alexandretta and a railway would at once reduce that distance to two days. The Russians have every motive for advancing their frontier to the Mediterranean, and a railway makes that advance a possible coup. At the same time the Turks have no motive whatever for moving northwards to attack A railway once built can only be destroyed by almost as great an expenditure of work as it required to construct. A parallel case occurs on our N.-W. Frontier with its possible railway extension from Chaman to Kushk.

The Sultan has, in fact, made a very good bargain. He pays high for the construction of the line, but the security he gives for payment is poor. The agreement ensures that the line will be well built, and the alignment chosen is the easiest and will connect up Constantinople with Bagdad and Damascus in the shortest possible time. The Germans, on the other hand, have the privilege of lending the Sultan £20,000,000 on very poor security, and a chance of open-

ing up the Mesopotamian oil field, if they strike oil.

The commercial prospects of the German undertaking are very poor. When Von Pressel, in 1870, said that lines in Asiatic Turkey would be remunerative, very little was known of the theory of railway prosperity, and even now Continental Engineers accustomed to see their railways in Europe pay their way wherever built, do not understand the conditions of railway projection in undeveloped countries. He, however, fully realised that the line is not a weltverkher-strasse as the Germans have it, but bases his opinion of its prosperity on the fertility of the provinces of Asiatic Turkey. says, L'artère ne doit pas pretendre a servir pour les transports en grandes Masses. Les marchandies de vuleur courante et principalement les cereales ne peuvent pas supporter des frais de transport au de la de 800 à 1,000 Kilometres. It was not until 1885, that it was begun to be known that railways supplied a means of communication between individuals, and that if there were not enough inhabitants to use a line it could not pay. A line 2,000 miles long, with London at one end and Paris at the other end, no intermediate traffic, would not pay its way. while the same population distributed all along the line would probably make it profitable. The reason for this is that a man's circle of friends, relations and business acquaintances probably does not extend more than 150 miles from his home, nor does he travel 2,000 miles to purchase his food or his clothes.

What we have to find out in order to arrive at an estimate of

he traffic prospects of a railway is:-

What is the total population which will make use of the line? How much per head is it likely to contribute to the earnings? What probability is there of improvement in the traffic, due to the increased facilities for trade and communication which the line will provide? Of these questions the answer to the first can be supplied by statistics, and of the second and third by a comparison with rail-ways already working in similar countries.

Turkey, from a railway point of view, may be well compared to

India. That is to say—

(1) The climate of half of it is tropical.

(2) The people are oriental, with habits and views like those of Hindustan.

(3) Labour is cheap. Six pence is a common daily wage.

(4) Manufactured materials for railway construction must all be imported from Europe.

(5) There is no industrial wealth.

(6) Land is mostly State owned.

(7) The population is agricultural and pastoral.

(8) But Turkish Government is unenlightened, while Indian Government is the dernier cri of administrative science.

Bearing this in mind, a review of the results of railway construction in India, its effects on increase of trade and population and the traffic obtained, will enable some estimate to be arrived at as to the results to be anticipated in Asiatic Turkey. Railway construction in India commenced in 1853. In 1860, there were 838 miles of railway open to traffic, in 1880, 9,166 miles and in 1900, 24,760 miles. The following table shows the value of trade in those years:—

# INDIAN TRADE.

#### TABLE I.

Indian trade,	Year.	Value in millions sterling.	Year.	Value in millions sterling.	Year.	Value in mil- lions ster- ling.	Year.	Value in millions sterling.
Imports Exports	1850	11	1860	25	1880	38	1900	70
	1850	19	1860	42	1880	<b>60</b>	1900	81

That is to say, in a country in some respects resembling Turkey, the trade doubled in the first ten years of construction, and in the next 40 years exports again doubled and imports increased by 180 per cent.

Turning now to statistics of railways, we have the following figures :-

TABLE II.

Name of Rail- way.	Mileage.	Con- structed during	Year.	Kupees per mile per annum.	Year.	Rupees per mile per annum.	Remarks.
Madras	876	1856-1871	1871	7,228	1900	13,208	13,208 represents 4½°/o on capital cost.
Sind-Punjab and Delhi.	693	1861-1878	1879	16,484	1884	15,080	Now incorporated in the North- Western.
Punjab-Northern.	447	1878-1883	1883	7,488	1885	8,580	
North-Western Commercial section.	2,046		1900	14,300	1901	18,200	18,200 represents 43 <sup>3</sup> /o on capital cost.
North-Western Military section.	1,070		•••	•••	1901	3,588	Military traffic.

NOTE.—Rupees per mile is equivalent to francs per kilometre.

The above have been selected as bearing some resemblance to projected lines in Asiatic Turkey. It will be seen that mileage receipts of Rs. 13,000 may pay 4 per cent on capital outlay.

Population of districts served by the Railways in Table II.

TABLE III.

Name of Railway	Province.	Area.	Year.	Population.	Population per sq. mile.	Romarks.
			(1871	31,281,177	228	Population in- creased 18 per
Madras	Madras	141,726	1891	35,630,440		cent per sq. mile in 30 years.
			(1901	38,209,436		in so years.
			(1881	2,500,000	52	Population in-
(	Sind	47,066	1891	2,875,100		creased 31 per cent per sq. mile
			(1901	3 <b>,2</b> 10,910	68	in 20 years.
North-	Baluchistan	45,804	1900	308,246	7	
Western.			(1872	17,611,498	168	Population in-
1	Punjab	113,675	₹ 1891	20,857,000	184	creased 18 per cent per sq. mile
			1901	22,450,000	198	in 30 years.

Trade and population of chief towns on Railways in Table II.

TABLE IV.

Railway.	Town.	Y ear.	Value of trade ster- ling.	Population.	Remarks
Madras	Madras {	1871 1881 1901	 £7,894,000 £7,006,810	397,552  509,346	Population increased 25 per cent. Trade stationary, partly due to bad harbour.
Namah Wasa	Karachi {	1872 1901	£3,507,684 £10,205,029	53,753 116,163	Population doub- led, trade trebled in 30 years.
North-West-{ ern.	Lahore {	1872 1901	No figures obtainable. 	128,441 202,964	Population in- creased 20 per cent in 30 years.

From the Tables II, III and IV, we deduce that the Madras Railway serves a country with a population of 269 per sq. mile, headed by a port whose trade is worth £7,000,000, and it draws therefrom receipts of Rs. 13,208 per mile (or francs per kilo) giving a return of 4½ per cent on capital outlay. Further, that on completion of construction the receipts were little more than half the latter and that it subsequently took 30 years for the receipts to increase 90 per cent.

Secondly, that the North-Western Railway, commercial section, serves an area of which roughly speaking two-thirds has a population of 198 per sq. mile, one-third \*68 per sq. mile and the remaining Military section, 7 per sq. mile, the whole headed by a port whose trade is worth £10,205,029, and the former draws therefrom receipts averaging Rs. 18,200 per mile (or francs per kilo) giving a return of 4\frac{3}{4} per cent on capital outlay, while the Military section passing through barren, unpopulated country and with an immense capital cost has by means of a large Government Traffic just failed to pay working expenses. The interest on its capital cost of £10,500,000, being partly defrayed by the receipts in the commercial section. The whole line together gives a return of 3\frac{3}{4} per cent

<sup>\*</sup> This figure is misleading, the area includes a great deal of desert. That actually tapped by the railway may be put at 200 per sq. mile.



Turning now to Turkish Railways and statistics of trade and population we have the following:—

TABLE V.

Turkish Railways—4' 81 gauge.

Name of Railway.	Length kilos.	Capital.	Kilo guarantee,	Kilo receipts francs per annum. 1901.	
		Frs.			
1. Ch. de Fer Orientaux.	1,159	=227,360,000 1,96,000 per Kil. First		8,881	Over capitalised. Also instancing
2. Salonika-Mo- nastir.	219	cost.	14,300	7,004	the small value of train-de-luxe and trans-con- tinental traffic.
3. Salonika-Constantinople.	510		15,500	3,584	
4. Smyrna-Aidin.	515			15,153	
5. Smyrna-Kas- saba.	270		8,550	15,441	Profitably worked.
6. Alashahr-Afiun Kara-Hissar.	251		18,881	4,754	
7. Ch. de Fer An- atolie (Ango- ra Line).	578		10,300 15,000	} 12,946	
8. Ch. de Fer An- atolie (Konia Line).	444		13,727	5,434	
9. Mersina-Adana.	67	_		7,043	Lust profitable
10. Jaffa-Jerusa- lem.	86			8,772	Just profitable.

Turning now to population and trade we have the following figures :-

TABLE VI. STATISTICS OF TURKISH TRADE AND POPULATION.

		Area.	Population.	Popula- tion per square mile.	Large towns.	Trade.
-(	Konia (a)	39,681	1,088,000	26	Konia 44,000	
	Adana (b)	14,359	403,400	28	Adana 45,000	£1,421,970
	Aleppo (c)	30,340	995,800	31	Aleppo 127,150	£3,649,212
1	Diarbakr(d)	13,703	471,500	<b>3</b> 6	Diarbakr 34,000	£557,557
- 1	Mosul (e)	29,220	300,300	10	Mosul 61,000	
i	Bagdad (f)	54,503	850,000	16	Bagdad 145,000 )	£2,430,055
	Busra (g)	16,482	200,000	13	Karbela 65,000 }	,,
(	Smyrna	20,844	1,396,500	67	Smyrna 201,000	£6,887,062
2 {	Broussa	28,486	1,626,000	57	Broussa 76,303	·
- (	Ismid	4,323	222,800	52		
	'Angora	26,055	892,900	31		•••
3	Beyrout	11,773	533,600	44	Beyrout 118,800	£2,086,187
-	Konia	<b>39,6</b> 81	1,088,000	<b>2</b> 6	Konia 44,000	•••

<sup>(1)</sup> Bagdad Railway districts where the line is guaranteed to pay 15,500 frs.

The probable volume of traffic depends primarily on the popula-Each individual is a potential centre of traffic. In England the contribution per head of population to the gross earnings of railways is £2 10s. 6d., in America £4 4s. 6d., in India Re. 1-6-0, and

per kilo under the German concession.

(2) Districts where railways are profitable.

(3) Districts where railways are unprofitable. They are not only poorly populated but have no country behind them indirectly tapped and no trade passing through from other countries.

<sup>(</sup>a) Is unlikely ever to provide a profitable traffic.(b) Provides a profitable traffic for a cheap short line.

<sup>(</sup>c) Would give a profitable traffic on account of the large area of Mesopotamia indirectly tapped

<sup>(</sup>d) If mines are opened up, mineral traffic is obtained, there will be a profit.

(e, f, g) Though thinly populated have large area of country indirectly tapped, and there is a large pilgrim traffic.

this same depends on the facilities each man has for making use of the railway and upon his condition of life and individual wealth. The extent or area whose population will contribute to the railway, may vary considerably. The Ismid-Angora line affects only a small area immediately on either side of the line, while a railway to Shiraz would draw traffic from three quarters of Persia. It is impossible to lay down the population affected and how much each individual will contribute, but one can be largely guided by making comparisons with known effects and conditions what the possible traffic on any proposed line may amount to.

By carefully studying the foregoing six tables, the following

deductions may be made:-

That short lines such as those from Smyrna serving a richly cultivated country with a population of 60 to the square mile, without great engineering difficulties, will return a handsome profit. Long railway systems, on the other hand, such as the Madras line and North-Western of India (Commercial Section) require an average population of at least 150 to the square mile to make them even reasonably profitable. Considering the Bagdad Railway as a whole, and observing the columns headed "Population per square mile" and "Trade" in Table VI, it is perfectly plain that the

cheapest line possible could never pay on those figures.

Let us suppose, again, that the line is to be built by a strong and resourceful Government who would take in hand large irrigation schemes and mining enterprises. Turning to Tables III and IV, it will be seen there are grounds for anticipating an increase of population of say 30 per cent in 30 years. But allowing for the density of population already existing in India, the population of Asiatic Turkey might be supposed to increase 50 per cent in 30 years from the opening of the Bagdad Railway, if given equal advantages of land settlement, and irrigation works, while the trade and population of Busra and Alexandretta might be expected to increase 100 per cent. Even then with these liberal estimates, after thirty years working, the average population per mile of the country served by the railway (which excludes all the desert regions of Mesopotamia) would be far short of the lowest estimate of 50 per mile considered likely to make for prosperity on a short line. Alexandretta, in the same period, might have risen to half the prosperity of Karachi and Bagdad or Busra to half that of Madras.

That is to say that by expenditure of immense sums in works for developing the country, a strong Government might scarcely expect to get a profit after thirty years of working the Bagdad Railway, sinking or working off the loss of thirty years interest and a proportion of the working expenses. Under existing conditions, the unsophisticated Government and the utter absence of security for property or even life, would make a railway investment in itself precarious, as well as giving rise to conditions which are inimical to any but the merest necessary traffic. Where there is no security there can be no credit, no freedom of trade, no encouragement to

improve. In such a country the regenerating effect of railways cannot be expected. In fact this effect on the trade and prosperity of countries so often attributed to railways, is largely due to other causes; a condition of society has produced the railways and the attendant prosperity; it is not that the prosperity has been produced solely by the railways. Under Turkish rule one cannot speak of development by railways, in the same way as one would of the development of some new tract to be opened up by railways in India.

With settled Governments and collateral works of irrigation and roads, a railway would be at once a protective and reproductive work and would, in time, with the increase of wealth and population of the country, become a paying property in itself. Looking at the question from the Turkish point of view, any system of railways should, before everything, be designed with a view to commercial prosperity. The idea of Turkey, the most pauperized country in the world, constructing railways solely for strategical or administrative reasons is preposterous. Even the Indian Government thinks twice before embarking on such schemes.

The German Commission which, after the completion of agreement, was sent out to enquire into the prospects of the line, fully realized and reported that it would take generations to overcome the deterioration of centuries. But the Professors although they realize the impossibility of colonization, still talk of the Garden of

Eden which is being reserved for Germany.

This conclusion comes from the consideration of the scheme as a whole. If, however, districts are taken in detail, it may be seen there are good prospects for the success of unambitious short lines in Aleppo and Bagdad. In the Aleppo case, one may recommend the prospects of a railway under Turkish rule without waiting for measures of reform. The Aleppo vilayet is comparatively civilized and there is an European community with large interests. The population per square mile is given as 31, and there is a large agricultural industry which would give a fair local traffic. But the point of most importance is the position of Aleppo as the market for an immense area of country right back to Diarbakr and Mosul and Bagdad. The whole of the trade of this country, when it reaches Alexandretta, is valued at £3,649,212. This trade is sufficiently valuable to make any line pay from Alexandretta to Aleppo, and in fact several concessions for such a line have been, at various times, granted, or been on the point of being granted. But, through the death of the promoters and other reasons, they have come to The correct alignment here would be a direct line of about 90 miles from Alexandretta along the sea coast to Antioch and thence through the Amk to Aleppo, which after many years would perhaps be extended to form the chord line to Bagdad viá the Euphrates valley, while the German alignment would join in from Killis at Aleppo. A great deal of discussion has arisen over the port of outlet, many, including the German promoters, favouring

the old port of Seleucia. There are several fundamental objections to this. In the first place, Alexandretta has a good harbour as it stands which can be converted, at small cost, into a first class harbour, while there is no possibility of making anything better of Seleucia or Swediyeh, than has been done with the harbour at Secondly, the whole trade goes down to Alexandretta, where many merchants have large interest and capital invested, but at Swediyeh there is nothing. It is well known by experience gained in other parts of the world, that attempts to alter the established course of trade and re-establish a sea-port in some neglected roadstead, are foredoomed to failure. The attempts in this direction have been many; the successes as yet none. Any private company would be justified in undertaking this short line to Aleppo and anticipating a traffic of 14,000 francs per kilometre. There are also good reasons for recommending an extension from Aleppo to Killis and Jerablus. The country passed through is prosperous and settled, and fairly well cultivated. In addition, the effect of the line on the trade from Diarbakr, Mosul and Mesopotamia would be to induce a large increase, while a good proportion of whatever through traffic would run over an Aleppo-Alexandretta line would equally follow the line to the Euphrates. This line in fact would possibly pay if economically conceived and carried out.

After crossing the Euphrates the conditions of unrest in the country, the thin population and the lack of agriculture, as distinguished from pastoral pursuits, make railway enterprise out of the question for any but Philanthropists or a far-seeing Government. The same may be said of the Mosul-Bagdad section whatever

alignment might be undertaken.

Coming now to Bagdad, there is again a short piece of line which might be at once constructed with prospects of pros-This would be a light line to Kerbala and Nejef. It would subsist on the pilgrim traffic, as well as a large goods traffic between the towns. There would be no local traffic as there is no population en route. The line would commence from the right bank of the Tigris at Bagdad and could be run to Museiyib for £2,000 a mile. Permanent-way and rolling-stock would be the sole expense. There are no bridges and no earthwork to be made. The Euphrates would be crossed by a ferry for the first few years. The rest of the line would be similarly cheap. The total mileage to Nejef would be about 100. Such a line would be a gold mine if properly worked. To extend it further to Busra would be useless; the population served would be almost nil, while the through traffic (by no means unlimited) has already a cheap route by the Tigris steamers against which it would be folly to compete.

In mentioning the large expenditure necessary in developing the country, we must not forget the most promising chance for

<sup>\*</sup> Refer. Wellington's Railway Location, p. 731.



capital in the oil fields of Mosul and Kerkuk. There is no doubt about the oil being there. Large ponds of pitch are to be seen, at which grimy Arabs distil Naphtha in small quantities and carry it in Russian oil tins to Bagdad and Mosul where it is sold at a medjidieh a tin. If the Germans or any one else for the Germans have not a monopoly of the country), strike oil in this field of a suitable quality, the railway may be certain of success. Not that the actual carriage of oil by train need be considered, it is the indirect traffic produced in the transport of materials for working the oil and the increase in population due to immigration, which would benefit the railway. The actual transport of the oil to the sea would probably be effected by pumping through long pipe lines.

A great deal of nonsense has been written about the through trade with India and the East, which the railway is to carry and the possibility of the Suez Canal going bankrupt when the line is opened. In the early days of railways and sailing ships, there would have been a large through traffic on such a line, but now-a-days there will be no competition. If there were through railway communication with India, it would cost about £9 a ton to send wheat to England by rail. In other words, wheat would have to be selling at seventy shillings a quarter in London before it would be worth while to send it, and it would probably be two or three months in transit. By sea the rates are about twenty shillings a ton and the duration of voyage under a month. I do not think any merchants are likely to go to the trouble to ship grain to Busra in bags to be transferred there to the railway and again transhipped over the Bosphorus, even if it could be done for £1 a ton. Many writers have realised this and among them Von Pressel, but they hold to the idea of the Indian mails, the train de luxe and the fruit and silk traffic. This traffic will be a small help to the line, but only a very small one, and the increased facilities for intercourse which the railway will give to mails and passengers is more likely to benefit the sea-borne-trade than the railway.

As to the Mail service with India, I have worked out in the Table on the next page what the effect will be.

Effect of the Bagdad Railway on Indian Mails.

Section.	Distance, miles.	Speed.	Time-bours.	Section.	Distance miles.	Speed.	Time-hours.
London-Brindisi	1,459	Actual.	45	London-Brindisi	1,459	Actual.	45
Brindisi-Bombay	4,603	15.5 knots.	252	Brindisi-Bombay	4,603	20 knots.	195
Suez Canal	98	Actual.	24	Suez Canal	98	Actual.	24
Total	6,148	:	321=13 days 9 hours.	Total	6,148	:	264=11 days 0 hours.
London-Vienna	1,162	Actual.	35	London-Baku	2,804	Actual.	105
Vienna-Constantinople	1,048	Actual	40	Baku-Krasnovodsk	180	Actual.	16
Constantinople-Busra	1,500	25 miles p.h.	09	Krasnovodsk-Merv	228	Actual.	24
Busra-Bombay	1,924	20 knots.	<b>2</b> 6	Merv-Quetta	009	25 miles p.h.	24
				Quetta-Bombay	1,000	30 miles p.h.	83
Total	5,634	:	219=9 days 3 hours.	Total	5,142	:	202==8 days 10 kours.

The present time between London and Bombay is 13 days 9 If the mails are sent via Bagdad the P. and O. Company will have to put its present Brindisi Steamer on the Bombay-Busra run and mails will then be delivered in 9 days 3 hours. Before, however, the Bagdad line is completed or fit for mail service, its possible completion will have forced the P. and O. Company to run fast steamers and they will then be delivering the mails through the Suez Canal in 11 days. But it will take the German Company, at their present rate of progress, at least another twenty years to complete the line to Busra and ten years after that the Turkish Staff may perhaps have worked up the running speed to 25 miles per hour. This speed may perhaps appear low, but the present speed of the mails on the Siberian line is only 17 miles per hour. After working up the line they will still have to persuade the British Government that they can run the mails with regularity and the passengers with safety and that it is worth while to remove the subsidy from British hands to a Foreign railway. After that the P. and O. Company will still receive the subsidy for the Bombay-Busra run, and their passenger and of course goods receipts will be hardly touched by the change. The number of passengers who will prefer to pay £20 more to travel vid Bagdad rather than by steamer to Marseilles will certainly not be more than at present travel vid Brindisi. Before, however, anything of this sort happens it is probable that the Quetta-Kandahar-Kushk connection will be constructed. This route, running across the Caspian and north of the Black Sea, will be only 5,142 miles long, and approximates very closely to a great circle course between Bombay and London. The shortest distance by great circle sailing, is 4,535 miles. By this route the mails will land in London in 8 days ten hours.

The most recent fantasy in railway extension is Mr. Black's Port Said-Karachi line which, he says, will be a great convenience and reduce the time for communication between Egypt and India to 2\frac{3}{4} days. Without disputing this very sanguine figure, I can only say that if Karachi and Port Said think that they can afford to spend about £20,000,000, for the luxury of a quick mail service and the benefit of a few first class passengers, by all means let them do so.

The Political and Strategical effects of the construction of the Railway may be taken together. Turkey is the immediate gainer by the new line, because the Government of the country will be simplified and because the possibility of quickly mobilising her forces increases her Power to resist Russian encroachments on the Ezeroum frontier. It will also enable her to make her influence more felt as a European power.

The line with a Naval base at its head on the Persian Gulf, undoubtedly forms a new strategical route to the East outflanking the Red Sea route. The question remains, who is to have control of this route? The Kaiser no doubt had dreams of holding it, but I think it is most unlikely that he will ever dispossess the Turks. If the Germans ever control the line for Military purposes, they will have

2,000 miles of railway communication through Austria, Servia, Bulgaria and Turkey, with the Russians on their left flank ready to cut them off. All these nations will require settlement either by force of arms or other inducements before they could make use of the line. In the Persian Gulf, their Naval base will be in a climate inimical to efficiency where their ships will deteriorate very quickly. During hostilities their fleet can be held up in the Gulf by a British blockading fleet at the head of the Gulf of Oman, where Lengah or Elphinstone Bay provide a suitable base of operations. The Persian Gulf is equally unsuitable for a Naval base on account of its heat, as is Vladivostock on account of the cold.

If the Turks are ever to be turned out, it will be done by the Russians coming down from Kars. But any Power that wishes to make strategical use of the line will be obliged to take possession of the outlet to the Gulf between Bundar Abbas and the Arabian Peninsular. A more promising Naval base for a Power controlling the line would be at Alexandretta, which will flank the route to the East, though on the wrong side of the Suez Canal, and at the same time has a perfect climate.

At its best, the Bagdad Railway is an inferior route to the East strategically compared with the Suez Canal route. Captain Von Witzleben, in an article in *Deutschland*, remarks that the best commercial is likely to be the best strategical route. Quite right; but, as I have tried to show, the Bagdad Railway is an inferior route

both commercially and strategically.

In conclusion recent German newspaper articles show that the German commercial classes are beginning to realise how they have been taken in by the Kaiser's misplaced enthusiasm for the Bagdad Railway. An article by Alfred Tausberg in Morgen about 12

months ago says:-

"It cannot be said that the influence of German foreign policy on German finance has been for good. The famous Kruger telegram, the hard-earned victory over Delcasse, have only resulted in the diversion of German capital from better fields of enterprise. Our ambitious aims in Morocco have come to nothing and, perhaps, in the near future we shall forget all about our present passion for colonies." He concludes by saying: "They must, for the future, shape their investments on principles of commercial commonsense and leave the everchanging claptrap of German foreign policy severely alone."

Five years have passed by, out of the eight allowed by the concession for the construction of the line, and only  $\frac{1}{10}$ th has been completed, through the easiest country. The Siberian line was constructed at the rate of 500 miles a year, but the Germans are unlikely to emulate this achievement. The clipping of the Kaiser's wings, and the rise of the Turkish Parliament, are events likely to divert German capital from the project, as well as French for the present, and will probably result in a considerable modification of the

original scheme.

In the meantime, the enterprise if successful will tend to increase the world's wealth, which will be for the advantage of trade, and in the endeavour to open up the market of Turkey for their own use, we may wish the Germans every success but at the same time may refrain from assisting them with our money.

[The following report of a debate which took place in the Turkish Parliament on 27th February 1909 and which appeared in the issue of the Pioneer of the 24th March 1909, is republished by kind permission of the Editor as it adds to the interest of the above article.]

Extract from the Pioneer of 24th March 1909.

### THE BAGDAD RAILWAY.

### DEBATE IN THE TURKISH CHAMBER.

An important discussion regarding the Bagdad Railway took place in the Turkish Chamber of Deputies on the 27th February, when a long pending interpellation on the subject occurred. The Minister of Public Works gave some preliminary explanations, and said that the Convention was kept secret owing to an undesirable custom of the old régime. This and other important Conventions would now be published. He thought that it contained nothing detrimental to the sovereignty of the Empire nor presented any political drawbacks. There was no fear that any political influence was given to any country, as the shares could be purchased by anybody.

He added that the terminus had not been fixed, but would possibly be Koweit or Basra. In any case, in view of the importance of the line in connection with the route to India, the most convenient terminus would be selected.

He hoped to reduce the delay of the construction to five or six years. The Minister stated that the contention that the northern trace had been abandoned under foreign political influence was an absolute error, the reasons being purely economical. He thought the reserve was necessary in referring to the Convention with Russia regarding the Black Sea basin, but he expected no difficulty in arranging matters now that both countries were free of despotism.

The interpellator objected to the argument regarding the shares, the financial scheme having formed the subject of warm discussions in foreign parliaments. He quoted M. Delcassé's opinion and attitude, and the English purchase of the Suez Canal shares. After an historical sketch, he stated that the worst direction for the line had been chosen to replace the northern line, and one by Alexandretta. The speaker then bitterly criticised the conditions of the Convention, finding 269,000f. for construction, and the guarantee of 15,500f. excessive, calculating that the interest charges and exemption of the Customs would cost the Government 20 per cent. He also condemned

the excessive mining privileges. He did not approve the cancellation of the concession, as old contracts must be respected, but suggested pourparlers with the company to obtain modifications.

## POLITICAL IMPORTANCE.

Further, the interpellator denied the absence of political importance of the railway to England, and considered that the concession was an advantage to Germany. Koweit, he pointed out, was a part of the Empire governed by a Kaimakam, who took an independent attitude. England raised a claim that the limits of the Empire were fixed by the Treaty of Paris. Koweit was occupied at a later time, not as an integral part, but under British protection, and the claim was supported by her fleet and accepted by the Porte. He expressed a hope that England would recognise that the question was not important, and abandon Koweit, realising that her interest was to show good will to an important Mussulman empire.

Referring to the Russian agreement, the speaker said it was made secretly in the Palace. He hoped that Russia would not insist, especially as the consideration had disappeared, namely, the prevention of fugitive Ottomans returning. He was confident that Russia would not maintain a relic tyranny which was so humiliating to

Turkey.

An Armenian speaker stated that there was no Convention, but a deed-of-gift, and proved by figures the value of the gift. He proposed the formation of a commission of inquiry.

During the suspension of the debate there was much agitation in the lobbies. Representatives of the railway and Embassy drago-

mans showed signs of nervousness.

When the discussion was resumed, Djavie Bey (Salonika) made an important speech. He dwelt upon the immense economic and political importance of the railway, but considered that the old régime had made a fatal mistake in entering upon a Convention for so gigantic an undertaking, which was enough to make the most prosperous country hesitate. Turkey was poor, and the only idea of the old régime was to please some Power and show its own importance. Its object was a purely political Convention elaborated in the Palace. He criticised the line adopted, but approved the cost.

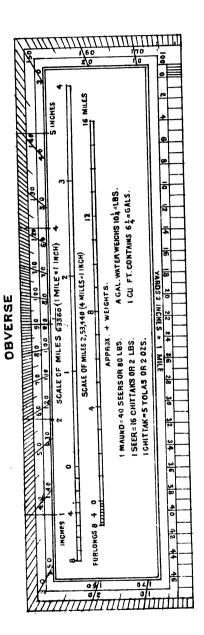
The Minister of Public Works, in reply, said that all the speakers had attacked the railway, though it was their duty to defend it. He stated that the company was ready to accept the Alexandretta trace, but the War Office objected. The matter was still under negotiation. He admitted that the Government had been deceived regarding the cost of construction, but not so much as previous speakers had stated. His own opinion was that the scheme might be prejudicial, but not alarming. The railway must be constructed to Halif, the Government having signed the Convention.

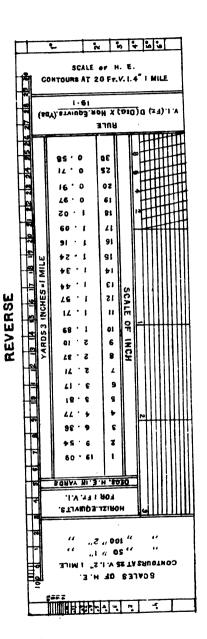
The House expressed satisfaction with the Minister's explana-

tions.



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#### CARDBOARD PROTRACTORS.

#### A SUGGESTION.

By "W."

In view of the increasing stress that is being laid on Field Sketching for N. C. O's. and men, it is surely time that some cheap form of protractor was made available to units for issue to N. C. O's

and men under instruction in Field Sketching.

It is suggested that a cardboard protractor be issued by the military authorities in India as an "India Army Form," an annual supply of 20 or 30 per regiment being sanctioned. In this way the protractor would be regularly distributed to units, annually, without any extra trouble or correspondence. Protractors of the pattern proposed, printed on stiff cardboard, could be produced wholesale at less than \(\frac{1}{2}\) anna each, and so the cost of the proposal would be very small indeed. The relief that would be afforded to Regimental Funds and Officers may be inferred from the fact that protractors in wood, of the same size as that of the attached design, cost Rs. 3-8 in ivory Rs. 14-8.

The writer has used a cardboard protractor (price 1d.) for four or

five years and it is still in good condition.

A specimen protractor is illustrated in the attached sketch, the information on which is adapted to Indian requirements.

# A SHORT HISTORY OF THE REFORM MOVEMENT IN PERSIA.

BY CAPT. C. H. G. BLACK, 34TH POONA HORSE.

For the last hundred years, signs of an awakening spirit of reform in the heart of the Persian people have not been wanting; and, as the national character is greatly influenced by religion, the nature of the reform was bound to contain a large religious element. Modern European civilisation had also by this time begun to make itself felt, and to imbue the people with certain new humanitarian and socialistic ideas.

Towards the middle of the 19th century, a spirit of restlessness and discontent, of rebellion against the tyranny of Islam and the domination of the priests, became manifest and found its first active expression in the Babi movement of 1844. This movement was a reaction against Muhammadanism in general, and particularly against the Shiah doctrines which declared that the gate of knowledge had been shut since the 12th Imam, the absent Mahdi, had vanished from among men, and which, preaching hatred and contempt of foreigners and unbelievers, kept the people in a grip of ignorance that tended to the moral and commercial ruin of the The underlying principle of Babism was the union and solidarity of the entire human race, its aim was a moral not a political conquest of the world. It recognised no human distinctions and approved a republican form of Government in which all men were equal; in fact preached socialism. Strangest of all, it declared the equality of the sexes and demanded the emancipation of women.

The spread of the Babi movement aroused the antagonism of the priests, who moved the Shah to put down the heresy and punish its founders. The movement was suppressed by the severest measures, but the interest and devotion awakened by its teachings, and the vitality of the new faith under the strain of persecution, showed that the Persian people had a desire for reform and were capable of great and sustained effort to obtain it.

Although the Babi movement was apparently crushed, the feeling of unrest remained. This was brought to a head, partly by the misrule of the Shah's Government and partly by the intrigues of the priests who, seeing an opportunity of re-establishing their position then being shaken by the liberal ideas which were rapidly gaining ground, aspired to bring the people once more entirely under their own control.

The condition of Persia had, for some time, been growing more and more intolerable. The Shah was a puppet in the hands of a corrupt and self-seeking ring of Ministers and courtiers who preyed upon the people; his private purse was exhausted, and his resources were at an end; he had been forced to borrow largely from foreign Powers and had squandered the proceeds; more money was urgently required, and the only relief to the situation appeared to be in yet another foreign loan which, however, could only be negotiated on terms that would deal a death blow to the independence of the country. There was, moreover, no guarantee that the money would not be mis-spent in precisely the same way as in former instances. The people were beginning to resent strongly the policy under which their country was gradually being sold to foreigners and the revenues pledged for no visible returns. Not an industry had been furthered or a factory built, not a road had been made or a canal dug, not a sign of increased prosperity was to be found, but rather every sign of further impoverishment, decay and disintegration. Ministers vied with one another in the venality and corruptness of their administration, appointments were sold to the highest bidders, property was misappropriated, tyranny and injustice condoned for pecuniary consideration, and security of life and right did not remain to any subject.

At the same time the spirit of independence and democracy was abroad in Eastern Europe. It had undoubtedly infected The example of Russia was before her. She saw how a down-trodden and oppressed people had roused themselves from a condition of apathy and despair, had demanded and obtained some measure of self-government. Why should she not do the same and escape from her degradation? The Japanese victories had given to Asiatic races a new sense of dignity; the South African War had not been without its effect on them. One great European Power had been worsted in Asia, and another had been hard put to it to maintain her supremacy in Africa and, though ultimately successful, had met with reverses. The granting of self-government to the Transvaal within a few years of its conquest had also profoundly impressed them. Persia saw a great autocratic Power totter in the West; she saw in the Far East a new world Power arise; her imagination ran riot, she thought she had but to cast off her fetters to become another Japan. She indulged in vain ideals and became filled with inordinate desires and extravagant hopes which entirely clouded her reason.

The priests saw their chance at last. In the meeting places of the faithful, from the pulpits of mosques, and through the medium of an enormously increased newspaper circulation, they disseminated revolutionary propaganda which had their origin in the religious centres of Najaf and Karbala, so sacred to the Shiah enthusiast. They declared the Shah to be the enemy of the State and of the religion, and his Government to be subversive to the principles of the faith. They urged the people to demand their liberty and place themselves under priestly guidance. They promised them freedom from foreign interference, relief from oppressive taxation, piece and prosperity. The aristocracy were unconvinced and turned,

a deaf ear to their exhortations, but the masses were stirred and their voice made itself heard in the demand for a constitution

and representative institutions.

The circumstances which attended this demand, and perhaps formed an occasion for it, were briefly as follows:—In December 1905 a large member of Mujtahids,\* as a protest against the ill-treatment of one of their number, left the capital and took "bast" (sanctuary) in the shrine of Abdul Azim outside the city gates. They publicly denounced the Shah as being the author of all the sufferings and miseries of the people, and would not yield until they had received certain assurances as to the grant of free institutions and the reform of justice. On these being given they consented to return to the capital. The Government imagined that the danger was passed, and by the appointment of a Council to consider the question of reforms made a half-hearted attempt to redeem their promises. As the Council of reform effected nothing, disturbances once more broke out. The Mujtahids began again to preach against the Government and to incite the people to revolt. In July 1906 a well known preacher was arrested. An attempt at his rescue brought about a conflict with the soldiery in which a Saivid t was killed. Tehran was in an uproar. Large crowds paraded the streets. The Government decided to use force. Troops were piqueted throughout the city and fired on the processions. Mujtahids were besieged in a mosque where they had taken refuge: the people were terrified and without leaders. It seemed that the forces of Absolutism had conquered.

The Constitutionalists, driven to desperation, decided to seek the protection of the British Legation. On the 2nd September, no less then 14,000 "bastis" (refugees) had collected in the Legation gardens. Although His Majesty's Government had refused to give active assistance to a movement directed against the Shah, vet the British Minister agreed to conduct negotiations between the refugees and the Government. The former refused to leave the protection of the British flag till their demands had been acceded Matters were in this state when, quite unexpectedly, several of the Tehran regiments, upon whom the Court party had placed reliance, refused to act against the people. The Shah was powerless and, after some further negotiations, a Rescript was published granting the people a National Assembly with legislative powers and instituting Courts of Justice. On the 18th July, a grand meeting was held in the Palace precincts, and the Assembly declared to be in session. A last attempt, however, was made by the reactionary party to frustrate the formation of a Constitution. The Shah's promises were whittled down one by one, so that little of the original project remained and the Shah refused to sign the Regulations for the Assembly. Excitement broke out anew, and the resumption of

Mujtahid is a title given to the highest ecclesiastical dignitaries.

<sup>†</sup> A descendant of the Prophet and therefore held in particular respect.

"bast" was threatened in the British Legation. The Shah, however, yielded to the united representations of the British and Russian Governments, and the Regulations for the Assembly were signed and published. The victory was won. The Persian National Assembly had become an accomplished fact. Persia had a Constitution.

Whether such a Constitution was suited to the condition of Persia and the character of her people is another matter. As an Empire, she is merely a geographical expression; as a nation, she has no existence. She consists rather of a collection of municipal communities, socially and economically separated and acknowledging no unity of interest. In this lies her unsuitability to any form of popular Government. The same condition had also given rise to the tangle of local assemblies and political clubs commonly known as "Anjumans," each working for its own ends. These must, of their nature, militate against the effective administration of the country and destroy central control, without which any system of Government inevitably falls to the ground.

Before, however, indulging in further speculation, it would be as well to tell, briefly, the story of representative Government in Persia

up to the present time.

The Constitution was signed on the 1st January 1907, seven days before Muzaffar-ud-din Shah died. With his last breath he had surrendered his autocratic powers. Thenceforward the will of the people was to control the actions of their Sovereign. Ministers of the State, though nominated by the Shah, were to be responsible to Parliament, without whose consent no tax should be imposed, no expenditure incurred, and no foreign loan or concession allowed. The Shah had the right of veto, the power of dissolving Parliament, and his sanction was required to all Acts and Statutes before passing into law. At the same time the Throne was vested in the lineal descendants of Muzaffar-ud-din Shah for ever, and suitable provision was made for the support of the Royal family and establishments. Liberty was given to the Press, and freedom of speech The Constitution was enunciated in 107 Articles. to every subject. and elaborate rules of procedure were drawn up to regulate the conduct of the Assembly. With these, however, we are not here concerned.

Muhammad Ali Shah succeeded Muzaffar-ud-din Shah and found himself, from the very beginning, in conflict with the Majlis, whose first act was to veto the project of an Anglo-Russian loan. Schooled in the principles of autocracy, he yielded with a bad grace to the demands of Parliament and resented, above all, the proposal to limit his private expenditure and his freedom to negotiate foreign loans. The Court party who well knew that they would themselves suffer under the new regime did not fail to give him every support and encouragement in his attitude of resistance to the Assembly.

The Ministers of State were unable to reconcile the autocratic tendencies of the Shah with the violent revolutionary propaganda of the political clubs, with which the capital abounded and whose

influence on the Majlis was growing irresistible. In the autumn of 1907, it was found impossible to form a Cabinet and the *impasse* thus created gave the Shah an opportunity of recalling the reactionary Atabeg-i-Azam, who had been in exile since 1903. A man of conspicuous ability and considerable influence in Persia, had he lived, he would probably have succeeded in restoring some kind of order in the country, but his assassination, shortly after his return, plunged the affairs of the State into still deeper confusion and chaos. Nasirul-Mulk was then called upon to form a Cabinet, but the uncompromising and unreasonable attitude of the Constitutionalists forced him into tendering his resignation.

The Shah, seeing that the anti-dynastic activities of the political parties were becoming uncontrollable, attempted a coup d'état. He dissolved Parliament and arrested Nasir-ul-Mulk and a number of other Ministers, who, however, were released through the advocacy of the British Legation. The bazars were closed, and for several days Teheran was held by two hostile armed camps, the Constitutionalists, who at one time numbered as many as 6,000 to 7,000 men, taking possession of the Sipahsala, mosque and adjoining buildings, while the Royalists occupied the Maidan-i-Tup. A compromise, however, was effected, the Shah making certain concessions, and a new Ministry was formed under the Nizam-ul-Sultaneh.

Then followed a deplorable period of depression. The Majlis indulged in frothy ebullitions but effected nothing; the Provinces broke into open rebellion; the revenues fell away; there was no military force in the country that could be relied on to restore order; the political clubs openly incited the people to revolution and regicide; the Press abused its liberty and transgressed all propriety in the violence of its invective against the Shah and his adherents; the Turkomans ravaged north-eastern Persia; complications arose on the Russo-Persian border; the Turks encroached upon the western frontier; and the semi-independent tribes of Arabistan indulged to the full their propensities for plunder and rapine.

It became more and more evident that the Shah and the Majlis could not work together. His Majesty's secret determination was to end the Constitution, and, though outwardly he gave every assurance of loyalty to it and repeatedly swore in public the most rigid oaths to uphold it, yet in private he intrigued against it by every means in his power. The Majlis was divided against itself. The priestly element refused to surrender the privileges of Musalmans, and seceded from the upholders of the principles of liberty and equality, who, on the other hand, wished to emancipate themselves from the yoke of the clergy. The work of the Assembly had been almost wholly destructive, it had nothing to show in the way of effective reform and was fast losing the confidence of the public.

The difficulties in the way of the Shah appeared to be insurmountable. The Treasury was empty, the authority of the old

régime had been destroyed, there was no means of enforcing the law, it seemed impossible to find trustworthy men for the executive of the country, disorder prevailed, crime increased. Feridun, the great Parsee banker and merchant, was foully murdered, the ex-Prime Minister, Mushir-ud-Daulah, died suddenly in very suspicious circumstances, the life of the Shah even was attempted.

Matters reached a climax in June 1908. The support given by the Zill-us-Sultan to the revolutionary party was causing the Shah great uneasiness. He had reason to believe that the Zill-us-Sultan was plotting against the Throne, his position was perilous,

and called for immediate action of a drastic nature.

At the instance of the Anjumans, a general strike had been proclaimed in the capital, and the Shah's direct order to resume work was ignored. As a consequence of this, the Shah assembled a military force outside the city, whereupon the Majlis presented him with a memorial demanding the dispersal of the force, together with assurances that he would not again in like manner transgress the laws of the Constitution. This memorial resulted only in incensing the Shah and provoked the reply "Remember well that my ancestors conquered the Throne with the sword and I am not disposed to lose that inheritance without resorting to the sword."

At the same time he demanded the banishment of certain of the Nationalist leaders and the closing of the Anjumans, the censorship of the Press, and the increase of the strength of the Palace Guards

to 10.000.

The Majlis, confident that the Shah would, as on former occasions, eventually yield, continued to disregard his authority and finally delivered an ultimatum demanding a reply to its memorial within 24 hours.

Little did they expect the reply they were to receive. The Shah decided to strike and by a sudden coup de main reversed the situation. Parliament was dissolved, Parliament house was surrounded by Cossacks, the surrender of the popular leaders was demanded, and on being refused and the attempt to seize them forcibly resisted, the Cossacks attacked and bombarded the building; the political clubs were broken up and completely cowed, a state of siege was proclaimed and martial law declared. The Shah had, through the instrumentality chiefly of the Cossack Brigade led by Russian officers, gained the upper hand.

A certain reaction followed on the Shah's successful coup d'état, but it was short-lived. Though a few isolated cities declared for the autocracy, the country as a whole remained either apathetic or sullenly hostile, and the Shah's authority extended, in reality, little beyond the confines of his camp outside the gates of the capital. The reactionary Governors, appointed under the new régime, were openly defied by the people over whom they were set to govern, and a state of anarchy ensued throughout the length and breadth of the land, which caused the gravest anxiety in Europe.

Tabriz revolted against the Shah's Government and for several months withstood a siege by the Royalist army, in which the city was reduced to the severest straits, and from which it was only relieved by foreign intervention caused by justifiable apprehension as to the interests and safety of the European community. Meshed attempted feebly to follow this example, but the revolution there, begun in the most theatrical manner, fizzled out ignominiously, and, leaving behind only disorder and confusion, was barren of useful results. The whole of south-eastern Persia was reduced to a condition of administrative chaos, more hopeless, if possible, than that of the rest of the country, and all kind of central control ceased entirely to exist. The Gulf districts, one after another, threw off the despotic yoke and, constituting local governing bodies, became autonomous. Isfahan was occupied, after some fighting, by the Bakhtiari chieftain in the interests of the people, and the Shah's officials were expelled from the town.

Finally in July last the climax was reached when a nationalist army that had collected in the neighbourhood of Rasht advanced to within sixteen miles of Teheran, where it was joined by a force of Bakhtiari from Isfahan. The Cossack Brigade, of which so much was expected, failed in their duties to protect the capital which was occupied by the nationalist troops. The Shah took refuge under the combined British and Russian flags, which act was considered tantamount to an abdication of the sovereignty. The nationalist leaders, thereupon, placed the crown on the head of the heir-apparent, a young boy thirteen years of age, and, appointing as Regent the head of the royal tribe of Kajar, declared a limited monarchy.

It is as yet too early to speculate as to what may be the outcome of this second attempt by the people of Persia to obtain some measure of representative Government, but with regard to the first attempt, a little reflection will show that the substitution of constitutional principles for autocratic methods has been fraught mainly with disaster. The short and troubled existence of the first Parliament is eloquent of the fact that Asiatic races are not yet ready for home rule. A long period of probation has, of necessity, to be undergone by all nations before they can assume even a small share of the responsibilities of Government. Persia, in her haste and impatience, has afforded a graphic illustration of the failure of the democratic principle in the East. At best a kind of modified Constitution is all that may be expected of her for many years to come.

Another question arises. Do or do not the teachings of Islam lie directly in the path of progress? In Persia, Religion and Democracy have combined against Autocracy, but is not this an unnatural union which cannot last? If we examine the attitude of the clergy during the recent popular movements, we will see that though it was undoubtedly initiated and directed by the great priests, who endeavoured strenuously to identify the cause of Islam with that of liberty and progress and showed the greatest ingenuity in circumventing the obstructive dogmas of the Koranic Law, yet of

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late signs were becoming more frequent and more marked that the clergy were regarding, with some anxiety, the growing independence of the democratic party, which was re-acting in a manner detrimental to their own powers and privileges, and in one instance it will be remembered there was an open rupture in the Assembly. Clericalism in Persia, no less than in Europe, comes to recognise that Democracy is its enemy, and I venture to think that it is upon a compromise between the two, in which Democracy would make certain concessions to Clericalism and Clericalism relax the rigidity of its dogma, and thus allow for the development of the forces of progress, that the future of Constitutional Government in Persia will greatly depend.

## BRITISH WAR MEDALS AND DECORATIONS.

By Major G. F. MacMunn, D.S.O., p.s.c., R.F.A.

[Note:—Medals marked with an asterisk are in the U.S. I. collection.]

The United Service Institution of India has recently been presented by Government with a large specimen collection of the Indian War Medals and other decorations which is well worth study by any one interested in military history and folk-lore, who may be in Simla: a description of the Indian medals may therefore be of considerable interest. As the United Service Institution hopes to be able to complete its collection with specimens of all British War Medals a brief reference is made to them also in this paper. For convenience of study and reference all the British medals including the Indian ones have been arranged in groups of which the division is purely arbitrary, being partly by periods and partly by countries, as best seems to suit the convenience of the student and the collector. They are arranged in these same groups in the medal case in the United Service Institution at Simla.

Apart from such rather debateable issues as Cromwell's Dunbar Medal it may be said that the first general issue of war medals to soldiers in general, apart from special strikings of presentation medals to commanders, commenced with the issues by the Hon'ble East India Company to its native soldiers at the end of the 18th century. Practically the first general issue to all ranks in England was the Waterloo medal issued bearing the Prince Regent's head in 1816. Then came in India the medals which were very varied and numerous (vide Group III), for the campaigns in Afghanistan in 1839—42. These, followed by issues for Scinde, Gwalior and the Sutlej campaign, brought all the old soldiers and sailors of the wars with France, and the old Indians of the campaigns of Lake and Sir Arthur Wellesley and the Marquis Hastings on to their hind legs. "Why should all these young devils be given medals for getting into trouble in Afghanistan when we of Assaye and Laswaree and Trafalgar and the Nile and the Peninsula go down to our graves with no reward or distinction?" So the Service Members of both Houses of Parliament rose in their wrath, and in 1848 the "Military General Service Medal" with 29 clasps, and the "Naval Medal" with over 200, were issued. Two years later the first Indian Two years later the first Indian medal, "To the Army of India," with 28 clasps commencing with the storming of Allighur in 1803, by Lord Lake's Army, and ending with the capture of Bhurtpoor in 1825, was also issued to survivors. After that the issue of medals became regularised, the Crimea introduced a deluge, and with one or two exceptions the issue has followed reasonably soon after the termination of a campaign. " Bis dat qui cito dat." It is interesting to know that the men of

the Peninsula and the old wars remained so long undecorated because the Duke of Wellington long opposed the issue of medals, which he considered as invidious and liable to undermine the high spirit and mutual regard of soldiers. We have seen enough of medal showers of recent years to see that, as in everything else the old Duke said or did, there was much wisdom and knowledge of Whether, however, the balance of argument is on his side is another matter. All men are not of iron, nor can all soldiers earn promotion, while it is still a happy fact that a small piece of silver of no intrinsic worth is considered ample reward for many months of toil and danger. Of late years medal collecting has become popular, and it is a fascinating collection for a soldier and an interesting ornament to mess or quarters. Regiments, especially British Regiments, have been collecting their corps medals for some years. A medal trade has grown up with all the side issues and frauds inseparable from trade, and especially trade in bric-a-brac and curios. During the season in town there are constant sales of medals, usually at Glendinings or Puttick and Simesons, wellknown auctioneers. Americans are eager purchasers of old British medals and probably are often the victims of the medal fake, as are officers who wish to present their regiment with old medals bearing the corps name which they see offered for sale. A little knowledge too is dangerous. It is usually believed that medals, if they verify, that is to say if the name on the edge and the clasps on the medal coincide with some actual medal roll, then the medal is genuine. When paying ten pounds or so for a medal it is obvious that proof of its being genuine is of value. For instance, it is easy to take a Peninsula medal and fake on extra clasps, though a reference to the rolls will of course expose this. But in many cases medal rolls cannot be consulted. The successful coup of the faker is to obtain an old Peninsula or Naval medal with a common clasp that has no name on its edge (as sometimes occurs), and on to this to fake the name of an actual recipient of rare clasps as discovered perhaps from some old catalogue of medals or sale list, and then fake the clasps. The medal may then verify happily, and detection can only come from the style of the naming on the edge. The new engraved naming is easy to fake. None of the old medals however have the names in this manner. They are indented by a process difficult to copy, and can almost always be detected by folk who know. Officers therefore who want to pay heavy prices for regimental medals will do well to consult collectors before they do so. A brief description of the old medals is not given according to the grouping referred to above.

### GROUP I.

THE HON'BLE EAST INDIA COMPANY'S MEDALS TO THE NATIVE ARMY—ISSUED TO NATIVE TROOPS ONLY (EXCEPT THE MEDAL FOR SERINGAPATAM WHICH WAS GIVEN TO ALL, IN VARIOUS

MEDALS, GOLD, SILVER GILT, SILVER, PEWTER, COPPER, ACCORDING TO RANK).

- \*(1) Campaigns in the Deccan and Mysore, 1786-89 ... Large and small.
  - (2) Mysore Medal, for the First Capture of Seringapatam in 1792.
- \* (3) Capture of Ceylon from the Dutch, 1795-96.
- (4) Capture of Seringapatam (Gilt, Silver. Tin, Copper)

  1799 Two dies in existence (Indian and English).
- (5) Expedition to Egypt 1801.
- \* (6) Capture of Bourbon and Isle of France (Mauritius) 1810 (Gold and Silver.)
- (7) Capture of Java 1811 Ditto
- (8) Nepaul 1811
- \* (9) First Burmese War 1824-26 (Gold and Silver.)
- \*(10) Coorg War, 1837, medals to loyal Chiefs of Coorg.
  - (11) The Monghyr Medal, to Native Army for quelling Mutiny of European Troops in days of Warren Hastings, etc.

Note.-Nos. 1 (large), 2 and 11 are not in the U.S. I collection.

The medals detailed above are all extremely rare, and outside a dealer's window or a collector's cabinet are rarely met with. The Government of India have the dies (which they should destroy) and are prepared to issue specimens (to certain corps as alluded to above) or what in the stamp collector's parlance would be called "reprint." With the exception of the Seringapatam medal (for the final and second storming by General Haris), which was given to various ranks in various different metals, they were only issued to the native ranks.

The Monghyr medal is a little mythical, a few copies exist but there is not much documentary evidence about it and its recipients. Its size is the usual one, and it bears a figure of Britannia under some palms on the *obverse* and a date and Latin inscription on the reverse.

No. (1) of the above has a figure of Britannia also on the obverse, seated on the shore on a trophy of arms stretching out a wreath. It was given for the operations apparently of the Bengal troops who were sent by Warren Hastings to the Deccan and Guzerat, under Colonel Pearse of the Royal Artillery (sent out to organise the Company's Artillery) and General Goddart, the former after the disaster to Colonel Baillie's force and Colonel Munro's discomfiture in Mysore and the latter for the expeditions to Guzerat,

which probably also included Captain Popham's seizure of Gwalior. The reverse of this medal had a Persian inscription of eulogy for the

troops.

No. (2).—In 1892 Lord Cornwallis captured Seringapatam, and the famous picture of the surrender of Tippoo's sons as hostages is well known. This is the first capture and not the final one. The U. S. I. has not a copy of this medal which has a figure of a sepoy with a Union Jack on one side and an inscription in Persian on the other.

No. (3) for the capture from the Dutch of Ceylon was only given apparently to the 29th and 30th Companies of Gun Lascars from Bengal who accompanied the Bengal European Artillery and not to the Madras troops.—(Tancred, p. 228). The medal was struck in gold and silver and has "For Services in the Island of Ceylon, A.D. 1795-6" on the obverse and a Persian legend on the reverse. About this time a badge of some kind was given to the Madras troops who captured Amboyna on the Spice Islands, but it is not known to be now in existence nor is its form known.

No. (4) is a well known and fairly common medal as the force engaged was large. Unlike the others it was given to British and native ranks of both services. On one side it has the British Lion knocking the Mysore Tiger down, on the other a very fine view of troops advancing to the storm. The U.S. Institution has two copies each in gold, silver gilt, silver, tin and copper bronze. This medal was worn sometimes with a yellow ribbon and sometimes with the well known red and blue ribbon as used for the Peninsula medals and Gold Crosses, and the Waterloo medal.

No. (5).—Given to native troops only for the Expedition to Egypt, under Sir David Baird in 1801, to co-operate with Sir Ralph Abercrombie. This force sailed from Bombay and was joined by a force from the Cape, landed at Kosseir, marched to Rosetta but did not see any of the larger fights. British ranks, including the British Officers of the Company's service, received the Military War Medal (commonly called the Peninsula Medal) with clasp "Egypt" in 1850. The survivors must have been few.

Obverse a sepoy erect with Union Jack, reverse a line of battle-

ship with pyramids in distance.

No. (6).—Capture of Bourbon (now Reunion) and the Isle of France (now Mauritius) in 1810. Owing to the preying on Indian trade by French Privateers, a force was sent to reduce the Isles of France, Bourbon and Rodrigues, the latter two in July 1810, the former in December. Bombay and Madras troops under General Abercrombie formed the expedition. This was, except in Java, the last occasion on which native troops of India served against Europeans. The obverse has a sepoy with the Union Jack trampling on an eagle, a field piece is close to him, and sea and ships in the background, reverse, dates and Persian inscription.

No. (7).—Having by now full command of the sea in Eastern waters every foreign possession that could harbour privateers was

attacked, and in 1811, Lord Minto decided to seize Java lest it harbour the French.

The details of this operation read like a modern fight in South Africa, names such as Weltevreden, etc., occurring. The Dutch lost 200 killed and wounded and 500 prisoners. Sir Samuel Auchmutty was in command, and the Governor-General went too. One Royal Dragoon regiment and five of the line went as well as the native troops. The British ranks received the Military Medal with clasp "Java" in 1848, and the sailors the Naval Medal with similar clasp. The Regent gave a gold medal similar to the Peninsula, to all field officers and senior sailors.

The medal to the native troops has on the obverse a native regiment storming Fort Cornelis and a Persian inscription on the reverse.

No. (8).—The medal for Nepaul. This war commenced with a series of disasters and reverses, and it was not till General Ochterlony took the field (known to the natives as Lony Ochter Sahib) that the war was brought to a satisfactory conclusion with the annexation of several of the border districts. Four King's regiments and a large native army took part. The British ranks received the "Army of India" Medal in 1851 with clasp "Nepaul." The native troops, medal had a design representing a hill fight on the obverse and a Persian inscription on the reverse.

All the above medals, with the exception of the small Deccan and a Monghyr medal, were much larger than the modern ones,

and roughish in design.

They were hung with a cord probably, each having a loop at the top for that purpose. The Seringapatam one was hung by a ribbon in the case of officers. In the U.S. I. collection they are all hung from white silk ribbon, but there is no record that this is correct.

No. (9).—The First Burma War took place in 1824-26. It was rewarded, for the British ranks, with the "Army of India" Medal

and clasp "Ava" in 1851.

The native troops received a handsome silver medal from a modern looking die, engraved by Wyon. The *obverse* represents the Burman Elephant *shikoing* to the Lion, and the *reverse* the attack on the Great Pagoda, Rangoon.

It was known as the "Ava" medal, and was worn with the military ribbon (red with blue edges). It was struck in silver and

gold, and the U.S. Institution has two copies of each.

No. (10).—The last of the Company's medals was that given to the Coorg chiefs who assisted us during the rising in Coorg in 1837. Some two hundred odd were given to the Dewans Pounapah and Bappoo and their followers.

The U. S. I. has two in gold and two in silver.

Regiments who have medals to claim from the Government under the recent letter, will find those in Group I exceedingly interesting and picturesque trophies. The surviving Madras regiments, and those of Bombay, should be able to make good their

claim to several. 1857 will have submerged most of the corps of the Bengal Army who had the old wars on their colours.

#### GROUP II.

KING'S MEDALS OF THE PRE-VICTORIAN PERIOD.

\*(1) The Army of India.—Medal for Campaigns between 1799 and 1826-21 Clasps-from Assaye to Bhurtpur known as the 1st Indian Medal. (Granted in 1851.)

(2) The "General Service" Medal—29 Clasps—includes Peninsula, American War of 1812, Egypt 1802 and Java 1811. (Granted in 1848.)

(3) The "Naval" Medal.—Over 200 Clasps—including Nile, Trafalgar, Copenhagen, many Boat and Ships action, Algiers, Syria, Navarino. (Granted in 1848.)

(4) The Waterloo Medal.

In this group have been included, for convenience of grouping, three non-Indian medals. The "War" or "General Service medal (2) was given to British ranks of the native army, and any of the Company's Europeans for the expeditions to Egypt and Java. Besides the well known Peninsula battles, clasps were also given for "Maida" in Italy, "Guadaloupe," "Martinique" and also for the American War of 1812 "Chateauguay," "Fort Detroit," "Chrystlers Farm." Ribbon, crimson with blue edges, obverse head of Queen, reverse "To the British Army" and the Queen crowning the Duke of Wellington.

The "Naval Medal," so far as India was concerned, with the exception of a clasp for "St. Fiorenzo" when that vessel took "La Piedmontaise" at the time of the capture of Cevlon, was only given to the King's and Company's ships for the expedition to Java,

with clasp" Java

The Waterloo campaign was promptly rewarded with a medal, same ribbon as the "War Medal," obverse head of the Prince Regent, reverse a figure of Victory, inscription "Wellington, Waterloo" and date. A similar medal with German inscription was given to the "British Hanoverian troops." The Waterloo ribbon was never worn without the medal

The "Army of India" medal with all its 21 clasps is in the U.S. I. collection, one specimen showing all the clasps for the Mahratta War of 1802-04, the other the clasps for "Nepaul," the Mahratta and Pindari War, 1817-18, and those for "Ava" and "Bhurtpur." The clasps for the earlier Mahratta war were as follows:—Lord Lake's army, "Alighur," "Buttle of Delhi," against the French trained Mahrattas under M. Louis Bourquin, who did not himself command at the battle (the enemy were the troops whom De Boibse had trained), "Laswaree," "Defence of Delhi" (when Colonels Burn and Ochterlony with a small garrison defended the city against Holkar), "Battle of Deig," and "Capture of Deig." During this campaign also occurred Lord Lake's famous pursuit of Holkar with a large force of Dragoons and native cavalry, overtaking him after a pursuit of over 300 miles near Furrukabad and attacking him at dawn, and also Colonel Monson's unfortunate retreat from Central India before Holkar, ending in a fearful débacle. This gave the blow to our prestige which, in connection with the failure of four desperate asaults on Bhurtpur, set all India talking rebellion. Sir Arthur Wellesley's operations on the western side of India, which went on at the same time, were rewarded finally with the following clasps:—"Assee," "Asseerghur," "Argaum" and "Gawilghur."

The clasps in the Mahratta and Pindari war, for the operations of the "Grand Army," and events connected with it were numerous, but there were few enough survivors to get the medals. "Kirkee," "Poona," "Kirkee and Poona," "Seetabuldee," "Nagpur," Seetabuldee and Nagpur," "Maheidpur," and "Cory-Bhurtpur, captured by Lord Combernere (Sir Stapylton Cotton of Peninsula fame), was the last clasp that this medal was given for. This city of the Jats had been attacked by Lord Lake without a siege train, and four desperate assaults had been made, and repulsed with immense loss, in 1804. The Raja had then come to terms, but the repulse of the English had set the whole world agog. So much so that for many years, when the English were tiresome, it was said, if not to them at any rate to come to their ears, "Go take Bhurtpur." So when 22 years after, it was necessary to kill the cat once for all, half the troops and heavy guns in India, went to the party. There was some quaint native prophesy too that Bhurtpur should fall because of an alligator (Khombir) and the Commander-in-Chief's name lent itself to the tale.

The medal was worn with a pale blue ribbon, obverse the Queen's head, reverse a seated figure of Victory with pile of arms and inevitable palm tree. Inscription "To the Army of India"

and " 1799-1826."

# GROUP III.

The Afghan War of 1839-42—many medals issued.

A \*(1) The Ghuznee Medal—Issued to the victorious army under Sir John Keane, which marched vid Ferozepur Sukkur, Quetta, and Kandahar to Kabul, storming Ghazni en route. Originally granted by Shah Sujah, but on his death given by the Company. (Ribbon, green and red)

B. The Rainbow Ribbon Series., viz., Medals 2 to 8.

• (2) The Khelat-i-Ghilzai Medal for the Defence by Captain Graigie, the 3rd Shah's Infantry (12th Khilat-i-Ghilzai Regt. 1 and some Bengal Artillery.

\* (3) The Defence of Jellalabad—Lord Ellenborough's pre-

sentation commonly known as "mural Crown."

\*(4) The Defence of Jellalabad—The Government presentation (to replace (3) recalled but only partially recovered) known as "Flying Victory." Group continued.

- C. The Avenging Series, bearing inscription "Victory Vindex' and not Victoria Regina—4 medals in all.
  - \* (5) "Kabul 1842" on reverse—To Pollock's avenging army.
  - \* (6) "Khandahar 1842" on reverse—To General Nott's Force.
    \* (7) "Ghazni Kabul" on reverse—To the force which General
  - \*(7) "Ghazni Kabul" on reverse—To the force which General Nott's picked up en route to Kabul.
  - (8) "Kandahar, Ghazni, Kabul 1842" on reverse—To General Nott's force who returned to India via Kabul.

The series of campaigns which make up the First Afghan War resulted in the issue of so many different medals that, from a collector's point of view, they are best given a group to themselves. There are, as shown above, eight different medals of which four are not It would be possible for any one man to have received This campaign, of which the details for many years went unheeded, has recently been considerably studied. The noticeable feature of it is the long period for which the country was as peaceful as India when ladies, children and pianos arrived, and officers from Ghuzni would ride into Kabul for Xmas week or the races, etc. The first medal has a handsome representation of Ghuzni on the obverse and was worn with a ribbon half green half red. It is fairly common, as there were many recipients. The event of this first campaign was the storming of Ghuzni by Sale and Dennie and the 13th after young Durand had blown in the gates. The recently published Life of Sir Neville Chamberlain gives much light on the inner life of the garrision of Afghanistan before the storm. The sack of Istalif, as graphically told in his letters, will be new reading to most. All the other medals were worn with Lord Ellenborough's military ribbon, of rainbow hue, designed to represent the rising sun and also used for the Scinde and Gwalior medals, and the star for Lord Roberts' March. (This latter a narrower ribbon than the old one.) When the Avenging Army, with the "Illustrious Garrison" of Jellalabad at its head, marched into British India over the bridge of boats at Ferozepur, they were received by the Governor-General, under arches festooned with rainbow design. Two noticeable points are of interest and worth remembering here. The 13th Foot and the 35th Bengal Native Infantry were devoted allies. The latter had given up much of their ration to the Europeans when the earthquake in Jellalabad destroyed the live-stock, as in the history of Arcot during the defence, and on parting at Ferozepur, the men of the 35th gave the 13th a giant spread, digging trenches for the feet of their guests and spreading the meal on a table made of the demblai. The 13th, during their tour of service, had always laid themselves out to fraternise with the Indian The 44th, who died to a man with the rest of the Kabul army, had, it is said, been notorious for the friction between them and their comrades.—(Colonel Seatons of the 35th N. I., "Subaltern to Colonel"). One more point is of interest with regard to the decorations for this campaign. After the successful establishment of Shah

Shujal-ul-Mulk on the throne of his fathers, he instituted the "Order of the Doorani Empire," and staffs, politicals, and selected officers were duly invested, while the non-recipients jeered. After the débacle the Order was recalled from the British recipients. A few were not handed in, and here and there people are to be met with who have one among their heir-looms. It was a handsome decoration in gold and emeralds with crossed scimitars, and there were Knights and Companions, etc.

It will be noticed that the last four medals in this group would, in these days, more suitably have been represented by one medal

and four clasps.

#### GROUP IV.

INDIA BETWEEN AFGHAN WARS OF 1839-42 AND CROWN GOVERNMENT.

# (A) CAMPAIGN IN SCINDE.

- \* (1) Medal for Meanee. "Meanee 1843" on the reverse—Lord Ellenborough's Rainbow Ribbon.
- \* (2) Medal for Hyderabad. "Hyderabad 1843" on the reverse.
- \* (3) " " both battles "Meanee-Hyderabad 1843" on the reverse—Lord Ellenborough's Rainbow Ribbon.
- (B) GWALIOR CAMPAIGN—Sir Hugh Gough's army of exercise marches on Gwalior.
  - \* (4) Bronze Star for Maharajpore, fought by Sir H. Gough (Lady Gough and other Ladies present).

Same Ribbon.

\* (5) Bronze Star for Punniar, fought by Sir J. Grey on same day.

## (C) SIKH WARS.

- \* (6) Sutlej Medal—" Moodkee," "Aliwal," "Ferozeshah," "Sobraon," first battle engraved on medal; clasps for subsequent ones. Several combinations. (Blue Ribbon, Crimson Edges.)
- \* (7) Panjaub Medal, Clasps for "Mooltan," "Chillianwalah" "Goojrat." (Blue Ribbon, Yellow Edges.)
- (D) (8) INDIAN MUTINY—Clasps, "Delhi," "Defence of Lucknow" "Relief of Lucknow," "Lucknow," "Central India." Ribbon Red and White Stripes.

In group IV have been collected all the medals for internal India that were given between the Afghan War and the Mutiny inclusive. It was the period of the final predominance of the English.

in the whole of the peninsula. The medals do not need much explanation. In our days one medal with two clasps would have replaced the three different dies that were necessary for the Scinde medal. The Gwalior campaign is one that is little known of in these days. Local intrigues following on the death of Janokjee Scindiah, who left a girl widow and no heir, had given rise to a difficult situation. Two rival ministers, the Dada and the Mama (nomenclature which delighted the army), were well in it. Further, the whole of the army of Scindiah with its still remaining French training and tradition was a distinct menace. It was known to have a leaning to join with the other great Hindu army, that of the Sikhs. It was thought wise to concentrate a British army of That army finally moved on Gwalior, but exercise at Agra. so little was resistance anticipated that ladies of the Commanderin-Chief's party rode at the head of the army on elephants. battle of encounter ensued at Maharajpore in which the Mahrattas fought fiercely, and as our heavy guns were not brought up, we suffered severely. A division under Sir John Grey fought a second Mahratta army the same day at Punniar a few miles off. A bronze star was given for this short war, with "Maharajpore" or "Punniar" on a silver centre. This star was originally issued with a big hook on the reverse to wear on the coat without ribbon. Afterwards, it was ordered to be worn with the rainbow ribbon, and folks made their own arrangement for affixing the ribbon. Therefore, no two stars are suspended alike. The U.S. I. has the original ones with Lord Ellenborough had a similar star in gold made for the four ladies who were under heavy fire for some time, Lady Gough, Miss Gough, Miss Curtis, and Lady Smith (wife of Sir Harry Smith), who was an old Peninsula campaigner, being a Spanish girl rescued by young Harry Smith from the sack of a captured fortress, and well known in her time as Juanita.

The First Sikh War, or "Sutlej" campaign, was rewarded by the "Sutlej" medal. There is this peculiarity about it that no clasp was given for the first engagement, the name of the battle being stamped on the exergue (the name given to the flat surface on either face that is free of design). Thus, we have medals without clasps with "Moodkee," "Aliwal" "Ferozeshah" and "Sobraon" stamped on them, and there are medals for each of these with clasps for subsequent ones. To-day, one medal and four clasps would have been the simpler solution The ribbon was blue with crimson edges. The obverse bears the Queen's head and the reverse a figure of victory and a trophy of arms. The Second Sikh War was rewarded with a separate medal, ribbon blue with yellow edges. There were clasps for "Multan," "Chilianwalah," and "Goojerat." Those who got Mooltan could not have Chillianwalah. Both these Panjaub medals were given to officers and men of the Indian Navy who served on gunboats in the campaign, on part of the old Indus The reverse portrays the Sikh army laying down its arms at Rawalpindi to Sir John Gillbert.

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The Mutiny medal has only five clasps but it might well have had many more. They were "Delhi," "Defence of Lucknow," given to the original garrison, and the First Relief under Havelock, "Relief of Lucknow," to Sir Colin Campbell's Relief, and "Lucknow," to the final capture of that city some months after. "Central India" was given to the columns under Sir Hugh Rose, which fought several actions worthy of a clasp in themselves. The medal without clasp was given to many. A few gunners got the medal with four clasps. The reverse is a figure of Britannia with a lion, holding out a laurel wreath.

## GROUP V.

CHINA.

\* (1) China .. 1842.

\* (2) China .. 1857-60 (Clasps)

" Fatshan 1857."

" Canton 1857."
" Taku Forts 1858."

"Taku Forts 1860."

" Pekin 1860"

\* (3) China .. 1900

(Clasp)

" Relief of Pekin."

All the same medal, but the 3rd has modern head of the Queen and a different clasp. Ribbon, crimson with yellow edges.

The medals for China have been put in a group by themselves. They have all the same ribbon, and the same reverse, but a different head of the Queen on the third, and the first had no clasps. The various expeditions were, first, the Opium War in 1842 when Sir Hugh Gough commanded the army. The medal was given to the Navy and Army with no clasp, obverse head of Queen, with reverse trophy of arms under a palm, motto "Armis exposcere pacem" and "China 1842" on the exergue below the trophy. A medal was also designed by Wyon for this campaign with a fine figure of a dragon on the reverse. It was not approved, but a few specimen copies are to be met with. The Second China War took place at intervals between 1857 and 1860, and it will be remembered that it was the troops going to China in 1857 who were diverted to India. The final settlement took place when the main expedition, assisted by the French, went from India in 1860 under Sir Hope Grant. This medal was the same as that for 1842 but without the "China 1842" below the trophy of arms. The clasps were five as shown above, but the first three were almost exclusively given to the Navy, who met with some severe handling in their landing ventures. The medal for the expedition of 1900, was the same as the other two with the modern Queen's head instead of the girl head on the obverse. There was only the one clasp. This clasp, however, was narrow like the Peninsula pattern, instead of being the shape of those on the 1860 medal, and the other Indian medals.

#### GROUP VI.

INDIAN MEDALS SINCE THE MUTINY.

- \* (1) India Medal of 1854, with 23 Clasps... Ribbon, red and blue stripes.
- \* (2) Afghan Medal—Clasps, "Ali Musjid,"
  "Peiwarkotal," "Charasia," "Kabul,"
  - "Kandahar" ... Ribbon, green with red edges.
- \* (3) Kabul-Kandahar Star. ... Rainbow ribbon.
- \* (4) Indian Medal of 1895 with six Clasps Two editions, with King's and Queen's head. Ribbon, red and green stripes.
  - (5) Thibet Medal—Clasps "Gyantse" ... Ribbon, red, green and white stripes.
  - (6) Indian Medal of 1908—one Clasp ... Ribbon blue with green edges.

Group VI brings us up to the present time. The old frontier medal, officially known as the "India Medal of 1854," was first given for pre-Mutiny campaigns, namely, the Second Burmese War of 1853-54, when the clasp was for "Pegu" and the Persian campaign of 1857, clasp "Persia." These clasps really bring the medal into Group IV, but for general convenience it is more suitable here. Another clasp of the pre-Mutiny period was that for "North-West Frontier," which covered many minor frontier expeditions from 1849 to Umbeyla exclusive, which however was not granted till the sixties.

The clasps are as follows:—

Pegu.Persia.Umbeyla.North-West Frontier.Bhootan.Perak.Jowaki 1887-8.Looshai.Naga 1879-80.

Burma 1887-89. Chin-Lushai 1889-90. North-Eastern Frontier 1891.

Samana 1891. Hazara 1891, Hunza 1892.

Burma 1889-92. Lushai 1889-92. Kochin Hills 1892-93.

Chin Hills 1892-3 Waziristan 1894.

Next, we may take the medal for the Second Afghan War which, like the old venture, was really two separate wars. The first phase was rewarded with the well-known medal, with clasps for "Peiwar Kotal" and "Ali Musjid," the second phase with clasps for "Charasia," "Kabul," "Ahmed Khel" and "Kandahar." The "Kabul-Kandahar" bronze star with the rainbow ribbon is also well known.

With the clasp for "Waziristan 1894" terminated the reign of the old Frontier Medal, after running for 45 years. The second Frontier Medal or the "India Medal of 1895" had a short duration and only lasted to 1902. During that period it amassed seven clasps— "Relief of Chitral 1896," "Defence of Chitral 1895," "Malakand 1897, "Samana 1897," "Tirah 1897-98," "Punjab Frontier 1897-98," and " Waziristan 1901-02." The medal, if issued for the first time with the latter clasp, bore the King's head. There is a story connected with the die of this medal, one of the Benjamin class. The die was not struck very promptly and the story goes that there was a delay. The reverse, as now, represents a British soldier and a Bengal Lancer both grasping the Union Jack on the top of a pass. The flag itself streams out in the wind. In the original design as submitted to Her Majesty, a pennon also streamed in the wind from a lance but in an opposite direction. Said the Queen, "Faith, tis a mighty queer wind you have in those parts at all." So the die had to be altered and hence the delay. I but tell the tale as it was told to me.

We then have the Thibet medal with clasp for "Gyant e" with a splendid design on the reverse of the Potala, ruined by being hardly raised in relief at all, which makes it like a Crystal Palace medal. Had it been properly struck it would have been a very fine medal indeed. In fact, the modern medals are inferior in workmanship, to the older ones. The reverse of the medals for the Second Sikh Wars and the Second Afghan War are excellent.

The last of the tale is the new "India Medal of 1908," which

we have not yet seen, with its one clasp.

The latter closes the tally of Indian medals.

#### GROUP VII

BRITISH MEDALS OTHER THAN INDIAN OR AFRICAN.

- 1. Crimean—With five clasps, pale blue ribbon with yellow edges with which may be included the
- 2. Turkish Modal-Given by the Turks to the Allies.
- 3. The Baltic Medal of 1854 Yellow ribbon with blue edges.
- 4. The New Zealand Medal—Ribbon, blue with crimson centre.
- 5. The Canadian Medal of 1885—Clasp "Suskchewan" given for Louis Riels Rebellion. Ribbon, blue with red edges.
- 6. Canada 1866 and 1870.—Clasps "Fenian Raids 1866" "Fenian Raids 1870" and "Red River 1870."

The clasps for the Crimea were "Alma," "Inkerman," "Balaclava," "Sebastopol" and "Azoj." The above medals do not call for much remark. That for New Zealand covered some twenty years of Maori war and the medal bore varying dates but no clasp.

#### GROUP VIII.

## South African Medals.

The medals for South Africa are sufficiently numerous to be grouped apart. They are as follows:—

Kaffir Wars — Wars at the Cape between 1834 and 1853.
 No clasps; ribbon, two broad and two narrow purple stripes.

2. Zulu and Kaffir Wars 1877-8-9—Same medal as above and same ribbon but with assegais instead of date in exergue with several date clasps.

3. Rodesian Medal—Given for the Mashona and Matebeleland campaigns; ribbon, orange and blue stripes.

4. The Cape War Medal—Given under due authority by the Cape Government for Basuto and other unrewarded Kaffir wars, with several clasps; ribbon, blue with orange centre.

6. The Queen's South African Medal with many clasps; ribbon, red edges, orange centre with two blue stripes.

7. The Kings ditto with two clasps; ribbon, orange, white and green.

#### GROUP IX.

#### OTHER AFRICAN MEDALS.

There are many other African medals which may be grouped together. In some of them the design is mixed and rather anomalous. The Khedive's Star and Medal for Egypt and the Soudan are included here:—

1. Abyssinia—Ribbon, crimson with white centre.

2. African General Service — With many clasps commencing with Coomassie. Ribbon, yellow with two broad and two narrow black stripes.

3. Egypt 1882—With three clasps, followed by many others for the Soudan. Ribbon, blue and white stripes.

4 Khedive's Star-Ribbon, blue.

5. The Khedive's Soudan Medal—With many clasps. Ribbon, yellow with blue centre.

6. The Queen's Medal 1897—Ribbon, yellow and black with crimson line.

7. The Central African Medal—Ribbon, black, white and brown. Same medal as (2), but hung from a ring.

8. The Ashantee Bronze Star—Ribbon, yellow with black edges, a presentation by the Queen.

9. The Ashanti Medal of 1900—Ribbon, green and black stripes.

10. The Uganda Medal—With several clasps. Ribbon, half yellow half red

 The Second General Service African Medal—To replace all above in the future. Ribbon, yellow with two broad black stripes and two narrow green ones. Given for Somaliland.

This Group IX practically closes all the war medals, with one or two special medals referred to in Group X. In Group X are included all the various service medals and the Arctic medals as well as the "Best Shot Medal." The anomalies referred to in Group IX are such as having the design for the Central African one the same as that for West Africa but hung from a ring with a different medal, which resulted in a difficulty with clasps for subsequent operations.

#### GROUP X.

## SPECIAL AND NON-WAR MEDALS.

1. Arctic Expeditions 1818-1855 -Ribbon, white.

2. Arctic Medal 1866. Ribbon, white.

3. Nigeria Company's War Medal. Ribbon, yellow, black and white.

4 Uganda Company's War Medal -Ribbon, blue.

5. Transport War Medal—For officers of War Transports.

6. Mediterranean Medal—The South African War Medal without clasp with "Mediterranean" on exergue for Militia 1899-1902.

# COMMEMORATIVE.

• 5. Delhi Assemblage—(Large medal.) Ribbon, crimson with yellow edges.

6. Jubiliee - Ribbon, blue and white.

7. Coronation—Ribbon, red blue and white.

\* 8. Delhi Durbar—Ribbon, blue and pale blue.

## LONG SERVICE, ETC.

\* 9. Meritorious Service, British Service.

\* 10. Long Service, British Service. | Several designs— \* 11. Long Service, H.E.I.C.S., Europeans. | Ribbon, crimson

• 12. Meritorious Service, Native Army

\* 13. Long Service, Native Army.

14. Long Service, Milita.

15. Long Service, Yeomanry.

16. Long Service, Volunteers.

17. Long Service, Territorial Forces.

18. Best Shot in British Army—Ribbon, black, red centre, white stripe.

19. Best Shot in Native Army—Ribbon orange.

20. Long Service and Good Conduct, Navy—Ribbon blue with white edges.

• 21. Volunteer Officers' Decoration—Ribbon, green.

## GROUP XI.

DECORATIONS FOR GALLANTRY.

1. Victoria Cross.
2. New Zealand Cross Ribbon, crimson.

3. Distinguished Conduct Medal.

4. Conspicuous Service Cross (Navy).

5. Ditinguished Conduct Medal, Native Army
6. Order of Merit 1st class Ribbon, blue with crimson

• 7. Do. 2nd , edges. • 8. Do. 3rd ..

Since Burma 1885-89 Bronze followers medals have heen issued for most campaigns.

Orders are not described here, as they are a very large and separate subject. The Order of British India of both the first and second class is in the collection of the United Service Institution. In addition to the old war medals, in the old days it was the custom for a corps to present regimental medals to distinguished individuals. This is a branch of medal-lore by itself. The standard work on War Medals is that by Tancred. There is a useful inexpensive book by Irvine.

Note.—The Council of the United Service Institution will be always glad to receive presentations of war medals, or medals in loan deposit, for display in the new building which is just being finished at Simla.

#### PRECIS OF FOREIGN MILITARY PAPERS.

#### FRENCH PAPERS.

Revue Militaire Suisse, March 1909.

The March number has some interesting notes in the letters

from correspondents.

The organisation of the Swiss Army is in process of revision. It is proposed to replace the four army corps by six divisions. A division will consist of three infantry brigades as a rule. One brigade to have four battalions—in four cases consisting of mountain troops—and the others six. In addition, there will be a regiment of guides (cavalry); a brigade of artillery (12 batteries); a divisional park; an engineer battalion; a company of telegraphists; a brigade equipment; a supply detachment and a hospital for each division. A mountain brigade will have five battalions, a company of machine guns, two mountain batteries, a company of sappers, a signalling section and an ambulance and mountain convoy.

A considerable sum is to be devoted to the acquisition and

improvement of artillery practice-grounds.

The Federal Council has also issued rules for the control of automobiles for military purposes. A register is kept in every Canton, of the cars that appear to be suitable for military purposes. These are carefully examined and classified. Cars with badly worn mechanism are not accepted. All cars must clear the ground by 20 c. m. (7.8 in.) and must be capable of negotiating 15 per cent slopes when fully loaded. Two independent brakes, either of which will stop the car with full load on any gradient, must be provided. Fuel for at least six hours must be carried. The register of cars also shows their distribution in the Cantons.

The establishment consists of the drivers, assistants, supernumeraries and substitutes The driver is, if possible, either the owner or the ordinary driver of the car. All may be either soldiers on the active or reserve lists or civilians.

The cars are all valued, 20,000fr. being the usual maximum; the rate of hire is 20fr. per diem, plus 1 per cent of the value.

Germany is making considerable progress with dirigibles. By the end of 1909 there will be a fleet of four of the rigid "Zeppelin" type, four of the non-rigid Parseval type and 3 of the semi-rigid "Militaire" pattern.

All these are capable of  $50 \ km$ . an hour. The "Zeppelin II" made a 12-hour flight without touching earth, while the "Parseval" and "Militaire" have passed  $11\frac{1}{2}$  and 32 hours respectively in the air. The latter made several long trips in February last, starting from

Berlin. General von Moltke and Prince Henry of Russia were among the passengers on various occasions.

All experiments with aeroplanes in Germany have, however,

proved unsuccessful.

Turning to interior economy, some alterations in the soldier's

ration are reported.

The German "iron ration" is to be called henceforth "reserve provision" and the soldier will only carry one ration; the second will be carried in the company provision car. Each ration consists of 100 grammes of biscuit, 80 gr. sugar, 40 gr. coffee, 50 gr. concentrated soup and 300 gr. preserved meat. Salt has been done away with, it being considered that the preserved meat contains sufficient salt.

The review of the year 1908, shows a slight increase in the army; 1 battalion of infantry, 1 regiment of cavalry, a battalion of

pioneers and a balloon company have been added.

The chief technical progress has been with motor cars and balloons. One hundred and fifty-eight of the former have been put at the disposal of the army, and 800,000 marks have been spent in subventions to manufacturers. In a trial held in November 1900, out of nine high wagons, eight crossed the Hartz Mountains and the forest of Thuringen in fifteen days without any trouble or damage. The marches were about  $9 \ km$ . a day. It is thus considered that the assistance of a motor vehicle may be looked upon as secured in case of campaign. The existing cars are, it is understood, to be allotted to army corps to enable general use to be made of them.

The clothing question is now settled. Uniforms will be of a neutral green in future, this colour being considered to be the most

difficult to distinguish.

Some notes on recruiting show that the average height of the German soldier is 167.74 cm (5ft. 6in.) the N. C. O. 168.56 cm. (5ft. 6.4in.) the one year volunteer (*Einjähriger*) 176.62 cm. The foot artillery have the tallest men, with an average of 172.31cm.(5ft. 7.8in), (except the guard, who run to 173.73 cm.) The statistics show that by far the larger number of good soldiers come from the country as opposed to the towns. Prussia, as always, leads the way.

The French correspondent notices the progress of ski-ing in France. The ski was first introduced into France in 1900. A Captain Clere of the 159th Infantry regiment at Briançon, made some experiments which definitely proved the superiority of the ski over the snow-shoe, and Briançon has gradually developed into the head-quarters of ski-ing, with a regular school of instruction. This school now has some 20 lieutenants as students. These officers afterwards act as instructors to the troops of the mountain garrisons, which now include those of the Jura, the Vosges and the Pyrenees as well as the Alps.

The course lasts a month and a half, and is spent in learning not only the art of locomotion on skis but also that of manufacturing the ski itself. It is the policy to spread the use of the ski among the mountain population, and this can only be done by making

it a cheap and easily obtained article of common use. The present Commandant of the school of instruction, Captain Rivas, has paid special attention to this manufacture which he has perfected by several patents. Men trained in the school become expert workmen, and it happened in 1906 that 15 of these, after taking their discharge, set up in business as the manufacturers.

Generally, the movement has made rapid progress, as shown by the important races and competitions instituted in the last year or two, under the auspices of the Club Alpin Francais at Chammix and elsewhere. The French Touring Club has also rendered material assistance and the large numbers of spectators and compe-

titors, are proof of the success of the venture.

Lieutenant Gélmet of the 30th Chasseurs, one of the foremost exponents of the ski-ing art, in a recent contribution to La Montagne said that the French skieurs had made great progress. Two light bamboo sticks are used for balancing in place of the single heavy pole general in Norway, with considerable benefit in ease of manipulation. Steep slopes, says this officer, can usually now be negotiated without falling into the awkward "tripod" position of the beginner; turns and sudden stops are generally well carried out; and the motion of the skieur is beginning to approximate to the long supple glide of Norway.

For military purposes the skieur is equipped much like the cyclist, and carries a rifle with short bayonet. Parties of not more than 20 under an officer form the unit. Twenty men in Indian file for mountain climbing extend over 300 metres, and this is the maximum one man can see and control. In fact, Captain Rivas is of opinion that the party should have two officers, the second to bring up the rear with the ambulance men. Accidents are always to be feared, the cold, or a hundred things, may place a man in need

of help and no man can be left behind.

### Revue Militaire Suisse.

April 1909.—This number's chief interest lies in a careful and able survey of the automobile question from the military point of view.

The author starts by explaining the reasons that whereas motor vehicles have been in use for civil purposes for upwards of ten years, no great use of this means of locomotion has been made for military purposes. The reasons are the constant changes in type, which made it very difficult to carry out conclusive trials; and the fact that inventors of cars for warlike purposes were never acquainted with the lines on which to work, and therefore produced unsatisfactory models.

It is incontestable that every army should endeavour to obtain the maximum of advantage from this new form of transport. But before doing so the subject should be studied on well defined lines. Among other things, the points to be considered are the means of obtaining the traction power for a vehicle of given weight and speed; the most suitable method of applying this power at the rim of the wheel, and the most suitable nature of rim. Further, the numbers and natures of the cars available, the use to which they can be put, the particular patterns suitable for military work, and lastly the attempts at organisation of motor cars which have been made in various armies.

Motive power.—The motor car may either carry its own power, as in the ordinary cars with explosive motors (and in this case the vehicle is independent, but only to the extent of its fuel load), or the power may be obtained, as expended, by means of a trolley wire from some distant source, and in this case there is no limit to the vehicle's capacity for work so long as the connection is maintained.

However, the former may be considered the most usual arrange-

ment.

Transmission.—The most common arrangement is a system by which the revolutions of the motor shaft are reduced and transmitted to the wheels by suitable trains of gearing, enclosed in an oil bath; the motion is conveyed from the gear box to the axle by a chain or other mechanical arrangement. The two driving wheels move independently by means of a mechanism known as the differential.

The rim of the wheel and its tyre are the subject of research. For pleasure cars "pneumatic" tyres are universal. These consist of an envelope of cloth and rubber fixed to the rim of the wheel, and containing an inner rubber tube full of air. This makes a perfect cushion between the soil and the wheel, levelling depressions and absorbing shocks. But punctures, wear in work and perishing of the rubber render this a far from ideal system.

For heavy commercial vehicles, solid rubber tyres have been employed with excellent results, as far as ease of traction goes. But the rapidity of wear has led to a very general reversion to iron for

the tyres of this type of cars.

The Road.—The road is the indispensable complement of the motor car. Without a road, the car is practically useless. The excellence of the road bed is also an important factor in the wear of tyres. This fact has lately come so prominently to the front, that a congress of road engineers was held at Paris last October under the presidency of the French Minister of Public Works. It is true that no new ideas were brought to light by this discussion, but there is no doubt that periodical gatherings of this description cannot fail to bring about some improvement in roads generally. The points considered included both present roads, their construction and maintenance, and the roads of the future.

Classification of motor vehicles.

These may be divided into:—
Motor cycles.
Touring cars.
Motor wagons and trains.

Motor cycles—May be divided into those weighing under and over  $50 \ kg$ . (110 lb). The latter description has the advantage of being able to tow a trailer, but is unwieldy. These machines, with speeds of 30 to  $60 \ km$ . (186 to  $37.2 \ \text{miles}$ ) an hour, and a radius of action of 200 to  $300 \ km$ . on one fuel charge, will render important services in keeping up communications between columns on the march, in intelligence work, and in carrying reports. They are extremely swift and present a small target; they can pass along narrow paths and be carried for short distances on a man's back. It is likely that motor cyclist companies will be as common in the future as cyclist companies are at present.

Tourist vehicles - Are all passenger cars and may be divided

into:-

Small cars (Voiturettes) weighing 400 to 500 kg. (818 to 1102th) and of 8 H. P.

Light cars weighing 500 to 600 kg. (1102 to 1322 h) and of 8 to 14 H. P.

Large cars weighing 800 to 1800 kg. (1763 to 3967 fb.) and of 14 to 70 H. P.

Racing cars of about 1000 kg. (2204 lb.) and up to 150 H. P.

Five per cent of these are propelled by electric or steam motors, the remainder by explosive motors.

These cars have a radius of action of 200 to 400 km. on one load of fuel, and are built of many different types (as far as the body is concerned), such as the tonneau, the limousine, the coupé, etc., etc. The staff of an army will be able to employ these vehicles with great advantage; though care should be taken that too many are not used, as the passage of cars disturbs marching columns.

Motor vagons or Poids Lourds—These include all kinds of vehicles for transport of goods and materials and may be divided into wagons for 1000 kg. maximum load, those for 1000-3000 kg. load and those for loads over 3000 kg. (6614 lb.) and lastly, wagons with trailer and motor trains. The normal proportion of tare weight to load is about 50 per cent, but in the lighter natures often rises to 100 percent.

In motor trains the power is usually carried on the leading vehicle and transmitted to the axles of the other wagons by various means; in the Renard train a shaft with universal joints performs this duty, in the Siemons Schukert train the electric current is employed. The main advantage of the train principle is the distribution of the load over a large number of axles. In a Renard train recently put into service, the weight per axle is about 3000 kg. Another advantage is the economy in personnel and engines.

The author next proceeds to consider the several objects of

the employment of motor vehicles with an army.

In the mobilisation he shows that a train of 160 motor wagons would do the work of 1440 horse drawn vehicles, the respective lengths of the columns being 3 and 12 km. (186 and 76 miles) and the time occupied in passing a given point 15 minutes and 3 hours. The objections to the automobiles are their confinement to roads, the

space they occupy in narrow lanes and the difficulty of turning in limited space. Some statistics are quoted to show that the experience of all wars, Franco German, Russo-Japanese and South African, proves that the supply train of modern armies have always been insufficient, and that therefore any system which will increase the facilities for supply is of importance. For instance at Kintshu in 1904, the II Japanese army expended 88 tons of infantry and 346.5 tons of artillery ammunitions, but the supply services were only able to bring up 27 and 70 tons respectively in replacement.

At the same time the motor vehicle is not suitable for the purposes of distribution, especially off the roads. The automobile should form the main carrier from the source of supply, but to it

should be added horse drawn transport for distribution.

These limitations do not, however, apply in the same degree to passenger cars provided with pneumatic tyres, which will also be brought into use. These cars with their light weight and high speeds will render most efficient service both in the distribution of material and the transpot of personnel, wounded, etc. It may even

be practicable to utilise this type across country.

One or two of the difficulties to be encountered are then mentioned, such as the possibility that the dust raised by a number of motor vehicles (as in a convoy) would be so great that the drivers would not be able to see. But at the moderate pace which would be employed this drawback would be minimised. Another point is the number of skilled drivers that would be required, two or three being necessary for each car. But this could be met by training men in the infantry.

This number also has a description of the Schwarzlose machine gun manufactured by the Steyr factory in Austria. This gun has been adopted in the Austrian army and has undergone very satis-

factory trials in France, Spain and Portugal.

The advantages claimed for this pattern are, first, lightness, then simplicity and fewness of parts, and lastly the use of a single spring to work the whole of the mechanism.

The gun weighs only  $17.2 \, kg$ . (37.9 lb.) against the 26 kg. (57 3 lb.) of the maxim. This quality of lightness is especially

valuable for infantry in bad ground or in mountain warfare.

There are only 10 parts, the barrel, the body, the breech, the main spring, the operating handle, the detent with safety arrangement, the distributor, the cover for breech, the water jacket and the sights. All parts are interchangable and the breech, main spring and detent can be removed in 7 seconds and replaced in 13 all without the aid of any tool.

The single spring used to fire the gun and close the breech is strong and safe as compared with the two spring system. The barrel does not recoil; the automatic opening of the breech is performed by the pressure of the gases on the base of the cartridge. The whole of the power is thus utilised. Also the fact that the barrel does not recoil does away with many minor difficulties.

The water jacket contains sufficient water for 3,000 rounds.

In the Austrian musketry school 35,000 rounds were fired from each of four guns without any damage of importance, and the accuracy in the last thousand rounds was but slightly inferior to that at the start.

The usual mounting is a low tripod, the rear leg of which is extensible. The height may be varied from 60 cm. (236 in.) down to 25 cm. (98 in.)

The pack transport is arranged so that gun and mounting can be carried on the same animal together with about 1,000 rounds.

The total load (without ammunition) is about 36 kg. (79.3 lb.).

Some of the main data are as follows.

Calibre—8 mm. (315 in).

Initial velocity—580 m. (1962 f.s.)

Maximum range—2400 paces.

Rounds per minute—400.

Total length—94.5 cm.

Weight of mounting-18.5 kg. (40.75 lb.).

Lateral angle—35°.

Maximum elevation-37.°

depression—40°.

This number's Italian correspondence traces the progress of the ski in that country. This method of locomotion was first introduced into Italy by the army some seven years ago; at first a measure of opposition was encountered; the use of the ski was characterised as a mere amusement unworthy of serious consideration. But by degrees the example set by the 3rd Alpine regiment was followed by others, until three years ago the first ski races were held at Milan, Turin, etc. In the present year there have been five meetings, of which one at Bardonèche was of an international nature. At this meeting, in addition to a large Italian military and civil contingent, there were officers of the French Chausseurs Alpins, Norwegians (two of whom gave a marvellous exhibition of ski-jumping) etc. Among other events there were a 20 km. (12.4 miles) race, a 10 km. race for officers and men and a jumping competition.

At present, the system of instruction in the Italian army is for an experienced officer to instruct six men in each company of his battalion every year. The instructor takes the squad into a suit-

able valley and puts them through a 40 days' course.

Revue Militaire Suisse, May 1909.

The May issue continues the article on "automobilism from the military point of view" with some notes on recent competitions, manœuvres, etc., in various countries

In France there were competitions in 1907-1908, organised by the Automobile Club de France and watched by the Minister of War.

In 1907, there were 49 competitors divided into five classes, goods wagons of  $50-500 \ kg$ .,  $500-2000 \ kg$ .,  $2000-3000 \ kg$ . over  $3000 \ kg$ ., and passenger cars for a minimum of 10 persons

space they occupy in narrow lanes and the di' and the speed limited space. Some statistics are quo' The distance was experience of all wars, Franco German, formula for classing African, proves that the supply train of been insufficient, and that therefore a the facilities for supply is of import 1904, the II Japanese army exp sed in km. tons of artillery ammunitions , dus weight of the body in ka able to bring up 27 and 70 to and prizes of 1,000 france for the care

At the same time the inanufacture, having at least 2000 kg purposes of distribution. →0 kilos, total weight, and with a 50 should form the main hall load to total weight. Also, the military to purchase the four highest classed curshould be added hor

These limitat

and with a covered seat for 3 persons and platpassenger cars t with fixed sides 60 cm. high. brought into

Ma reserve of water and fuel for 100 4m. in receptacles speeds will filled and emptied without disturbing the load. of materi be pro

without disturbing the load. and an arrangement to prevent the car taking charge.

manufacturer of rules about marching with convoys at a pace of the large.

manufacturer of rules about marching with convoys at a pace of the large. me

12 km. an hour. Harmon, there were 47 competitors and the conditions were the same as in 1907, but one or two more classes of cars were also the limit of weight on an axle was fixed at 4 tons. The The War Minister offered community and the tons The The War Ministry offered prizes on practically the same con-

buons as before, except that explosive motors were only allowed to are alcohol. The first prize was 8,000 francs or an Opet durt of that value. Also the administration agreed to buy 8 or 10 cars with the following qualifications :-

1. To have a platform 1m. 70 by 3.50 m, with 60 cm, fixed soles and covered seat for 3.

2. Fuel containers for 120 km.

3. To have hooks on the chaosis with chains, etc., for draught

Rear wheels to have iron tyres.

As a result of the two competitions it was observed that generally-

1. Efficiency is increasing.

Speed is being reduced.

Metallic tyres are replacing rubber for heavy goods cars.

4. The angular speed of motors is on the increase.

5. Chain transmission is becoming more general.

6. Whereas in 1907 only 30 per cent of cars survived to the and, in 1908 there were 70 per cent in the final trials.

In Germany, there was a trial in a closed circuit Berlin to Brandenburg, thence to Guterhourg and from there to Berlin again

ound. The trial lasted 5 days. Forty-two cars completed the

nce, motor vehicles were first used on manœvures in 1900, iff work to begin with. In 1903, the Renard road and created a sensation. In 1905, motor vehicles abulances, cavalry reconnaissance and search lights. Foured cars were used, and heavy ordnance moved by place of horses. In 1907, for the first time extended trials or wagon for supply services were made. The 18th army ps (in the south west) used 40 wagons with an average net load of two tons and a daily trip of 100—140 km (60 to 87 miles) while near Besançon the 7th corps were provisioned by 3 Renard trains, carrying 10 tons a piece. The results were most encouraging.

In 1908, the French War Minister asked the various manufacturers to supply 80 cars on hire. But the rate offered was low, the response not satisfactory; in the event only the army of the east

was provided with motor supply.

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The War Minister, however, was incited by this failure to make a special demand from the Chamber of Deputies; and in January last a law was passed for the enumeration, classification and requisitioning of all motor vehicles in the country for military purposes.

In addition, the French army possesses some 30 motor wagons for artillery services and one for the intendance. Also 100,000 francs

have been provided for purchases in 1909.

In Germany, an important trial was held in 1907 over a 1000 cm. (621 miles) course, between Berlin and Posen, with two columns of cars; a light column of 16 cars and a heavy column of six cars. The total loads were 68 and 55.5 tons. Some heavy Fowler cars, with average net loads of 7½ tons, gave the best results. In 1908, at the manœuvres, one division of infantry was supplied by a Siemens Schukert road train (of 5 vehicles), eight other wagons and two passenger cars. Another division had some dozen wagons, and a country division eight light wagons. The daily trip was 100 km. and the results good.

As the outcome of these trials the Reichstag has voted 800,000 marks for the subvention and development of the motor transport service in 1908. Every firm which acquires an automobile of the type approved by the German Military administration (30 H. P. of 4 cylinders) will receive a subvention; and every purchaser of a motor wagon from certain specified firms (Daimler, Büssing, etc.), who is prepared to enter into an agreement with the military authorities to place the vehicle at their disposal in certain conditions, will receive a subsidy of 4,000 marks on purchase and an annual retainer of 1000 m.

The Swiss Automobile Club organised a competition in 1907 for industrial vehicles of up to 1500 kg, net load and above. The course was some  $400 \ km$ , of extremely difficult road and there was

including driver. The limit of weight was 9 tons, and the speed was to be between 12 and 25 km. per hour. The distance was 150 km. a day, average, for 21 days. The formula for classing the results was  $\frac{TO}{PD}$  where T = time in hours

C = combustible in litresD = distance traversed in km.

P =useful load *plus* weight of the body in kg.

The Minister of War offered nine prizes of 1,000 francs for the cars with highest marks, if of French manufacture, having at least 2000 kg useful load, not exceeding 6000 kilos. total weight, and with a 50 per cent proportion of useful load to total weight. Also, the military administration agreed to purchase the four highest classed cars possessed of the following qualifications:-

1. To be provided with a covered seat for 3 persons and plat-

form 1.30m. by 3.30 with fixed sides 60 cm. high.

2. To carry a reserve of water and fuel for 100 km. in receptacles capable of being filled and emptied without disturbing the load.

3. To have at least two double-acting breaks, a keel to prevent running back and an arrangement to prevent the car taking charge.

4. A number of rules about marching with convoys at a pace not below 12 km, an hour.

In 1908, there were 47 competitors and the conditions were much the same as in 1907, but one or two more classes of cars were added, also the limit of weight on an axle was fixed at 4 tons. The minimum speeds for the heavier cars was reduced to 10 km. an hour.

The War Ministry offered prizes on practically the same conditions as before, except that explosive motors were only allowed to use alcohol. The first prize was 8,000 francs or an objet d'art of that value. Also the administration agreed to buy 8 or 10 cars with the following qualifications:—

1. To have a platform 1m. 70 by 3.50 m with 60 cm. fixed sides

and covered seat for 3.

2. Fuel containers for 120 km.

3. To have hooks on the chassis with chains, etc., for draught purposes.

Rear wheels to have iron tyres.

As a result of the two competitions it was observed that, generally-

 Efficiency is increasing. 2. Speed is being reduced.

3. Metallic tyres are replacing rubber for heavy goods cars.

4. The angular speed of motors is on the increase. 5. Chain transmission is becoming more general.

6. Whereas in 1907 only 30 per cent of cars survived to the

end, in 1908 there were 70 per cent in the final trials.

In Germany, there was a trial in a closed circuit, Berlin to Brandenburg, thence to Guterbourg and from there to Berlin again, twice round. The trial lasted 5 days. Forty-two cars completed the course out of 52 entries. The Swiss firm of Arbon was the chief winner.

In France, motor vehicles were first used on manœvures in 1900, mainly for staff work to begin with. In 1903, the Renard road train appeared and created a sensation. In 1905, motor vehicles were tried for ambulances, cavalry reconnaissance and search lights. In 1906, armoured cars were used, and heavy ordnance moved by motors in place of horses. In 1907, for the first time extended trials of motor wagon for supply services were made. The 18th army corps (in the south west) used 40 wagons with an average net load of two tons and a daily trip of 100—140 km (60 to 87 miles) while near Besançon the 7th corps were provisioned by 3 Renard trains, carrying 10 tons a piece. The results were most encouraging.

In 1908, the French War Minister asked the various manufacturers to supply 80 cars on hire. But the rate offered was low, the response not satisfactory; in the event only the army of the east

was provided with motor supply.

The War Minister, however, was incited by this failure to make a special demand from the Chamber of Deputies; and in January last a law was passed for the enumeration, classification and requisitioning of all motor vehicles in the country for military purposes.

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The Swiss Automobile Club organised a competition in 1907 for industrial vehicles of up to 1500 kg. net load and above. The course was some 400 km. of extremely difficult road and there was

also hauling trials on steep gradients and short trips off the roads. Of 18 cars, 16 completed the trials, which is held to augur well for the future of the motor industry in Switzerland.

An article on the Swiss Militia Army is of interest at the present juncture. The author, Col. Wildbotz, commanding a division of the Swiss army, says that the alleged failure of the Swiss Militia to come up to expectation is due to the facts:—

1. That the people are not sufficiently alive to the danger of

war which threatens them, and

2. They have not yet placed the confidence which it deserves in the National defence system.

They have not sufficient faith in themselves.

It is unnecessary to insist on the possibilities of armed conflict. Contemporary history furnishes the warning. But the author considers that a complete confidence in, and comprehension of, the army by the people will bring about the conditions in which that army may be expected to meet all its obligations.

A modern army must choose between the militia system and the nucleus or skeleton system (armée de cadres). The mercenary army is out of date as being incapable of furnishing the numbers required; and the replacement principle or army of substitutes, no longer accords with modern ideas, which require that all classes alike should take their share of the burdens of military service.

The nucleus army (armée de cadres) keeps a large part of its strength on a war footing, and completes with reservists on mobilisation. The German army is the perfect type of this skeletion system. In Switzerland, the militia army is the only one possible.

This Swiss army is unique in the world as being the only militia which is completely organised and equipped and furnished with the

proper proportion of staff and auxiliary services.

The Swiss army is based on the historical development of the country and supported by the principle of universal compulsory service.

The fundamental element of an Army is the military spirit which reigns in it; that is, absolute devotion to duty, a devotion which suffers all things, ventures all things and is the outcome of confidence in the army itself and in its leaders. This constitutes true discipline, and from this discipline comes esprit de corps, i.e., that which combines all efforts at the critical moment.

It is generally believed that all this can only be attained by prolonged military service and by permanent cadres. But cannot, and should not, a military spirit find its solid foundation in the mentality of the people? If so, a short period of instruction should produce and develop a sane, robust and pure spirit

This the author considers to be the case in Switzerland, and quotes the opinions of foreign observers in confirmation of his own. A sane democracy like the Swiss favours the development of this spirit which submits the individual to the general interest, and it is this predisposition which should be cultivated.

It must, therefore, be understood that it is of little avail to spend money for military purposes on the one hand, and on the other to hamper the observance of discipline by restructions.

The remainder of the article is devoted to the system of training, to be employed in Switzerland. The author concludes, as be began, on an entimietic note.

on an optimistic note.

# SPANISH PAPERS.

Memorial De Artilleria, February 1909.

Among the numerous excellent items in the February issue appears an article on the prevention of accidents with smokeless powder.

Two methods have been proposed. One is to surround the explosive with finely powdered substances which would absorb the heat generated by decomposition, neutralize the acid vapours and form an atmosphere unfavourable to combustion. Bicarbonates and carbonates are indicated as suitable for the purpose, but an essential condition is that the magazine containing the explosives should be so arranged that the gases can circulate freely; and it is further recommended that the protecting substances should be impregnated with colouring matter, which is affected by acid vapours, so that the variations in the stability of the explosive can be detected at a glance.

The other suggestion is to introduce a metal tube 1 mm. in diameter into the interior of the nitro powder magazine, the outer end of the tube leading to a receptacle containing some porus substance impregnated with a re-agent. The acid gases generated by the decomposition of the explosive find their way through the tube to the coloured substance, which responds to the acid and shows at

once the state of affairs.

Another article describes a new source of power for the propulsion of submarines when submerged. This is the invention of the French Chief Naval Engineer, M. Maurice. It consists simply of using steam under pressure in steel reservoirs. Water is heated to 200° to furnish steam at 10' atmospheres If the boiler or receptacle be then removed from the furnace, it will furnish steam for a given

period at a pressure suitable for actuating a motor.

The advantages of the system are manifold. The machinery in the submarine is much simplified; the present dynamos, and heavy and cumbersome electric storage batteries, can be dispensed with altogether. The reserve of energy in the steam accumulator is far more dependable and secure than that in electric accumulators; there are no poisonous fumes such as are given off by the electric cells; and the thermal efficiency is far higher, provided proper arrangements are made to prevent the escape of heat by surrounding the reservoirs with non-conducting substances, etc.

Another article deals with a suggestion to add a third pair of wheels to automobiles. This is a French suggestion and is claimed to have the following advantages:—

- 1. Prevention of all violent shocks when the car is in motion, with the important corresponding advantage of a reduction in the strains and stresses and, therefore, in the wear on the vehicle, engine and tyres.
- 2. Greater convenience for passengers, and better preservation of goods carried.
- 3. With the same weight on each wheel greater transporting capacity.

4. Less danger in turning (no side slip).

5. Ability to turn in a small space; a six-wheeled car could turn in the same distance as a four-wheeled vehicle of half its length.

It is, therefore, believed that six-wheeled motor cars will come into use at once for all general purposes of transport, and for heavy traffic.

The same number gives some statistics on the losses in the Russo-Japanese war showing the percentages of wounds, etc., due to the several causes, and comparing the results with those of former wars.

		PERCEN	TAGE OF I	Relation of loss caused by	
Army.	Rifle.	Gun.	Other causes.	artillery to that by infantry.	
Prussian, 1866		79	16	5	· <b>2</b> 02
Austrian, 1866		60	3	7	·0 <b>33</b>
German, 1870		90	8	2	.089
Japanese, 1894		90.8	7.6	1.6	-084
Russian, 1904		80	18	2	·225
Japanese 1904		85· <b>5</b>	14	1.5	·17

It appears from these figures that the losses from artillery fire were important in the last war, and to this must be added the fact that the proportion of killed due to artillery fire is well-known always to be higher than in the case of rifle fire, and that it is often very difficult to distinguish between shrapnel wounds and rifle-bullet wounds, with the result that not infrequently the rifle obtains credit for the work done by the gun.

Moreover, the proportion of artillery to infantry engaged naturally affects the figures, and as in this war the Russian losses from artillery fire were 18 per cent and those from rifle-fire 80 per cent, and that since the war the number of guns per army corps has been increased some 80 per cent, it may be expected that in a future war the losses from artillery will rise to 30 per cent, while those due to the infantry will come down to 70 per cent.

Another table compares the results produced by the artillery fire with the expenditure of ammunition.

Battle.		fired by	JAPANESE LOSSES.		wounds 1 by one	TO PUT A MAN OUT OF ACTION RE- QUIRED.	
		Rounds fir Russian lery	Total	Due to artillery fire.	of nce	No of Rounds.	Weight of project- iles.
				1	,		ky.
Wafungu		10,000	1,213	170 (14°/~)	·017	59	363
Liaoyang		116,000	24,060		.027	37	240
Mukden		250,000	58,000	5,874 (15·3%)	.0235	43	260
Total in the war		954,000	171,400	24,000 (14%)	.025	40	260

This table shows very clearly the small effect of shrapnel fire in relation to the expenditure of ammunition in 1904. And this is still more remarkable when compared with the experience of the war of 1870. At St. Privant every German put out of action cost the French artillery no more than 22 shell, weighing 88 kg., and probably, if the shrapnel wounds could be distinguished from rifle wounds in all cases, the figures would be lower still.

The Japanese artillery was, however, more successful, on one occasion only firing 16 rounds for each Russian put out of action; although at Kinchu they fired 170 rounds to obtain the same result. But it is admitted that the circumstances were such in the latter case that the artillery were much at a disadvantage.

In order to show that these artillery figures are not so extravagant as they seem, the proportions for infantry are also given: from which it appears that, even allowing the latter arm 85 per cent of the losses, it required 1,053 cartridges to put a man out of action, or a weight of 15 kg. of bullets, or putting it the other way only 1 per cent of bullets produced a wound. In the Kinchu battle already referred to, a man put out of action cost 2,500 rounds.

Going back to the war of 1870, it is calculated that 6 per cent of German infantry bullets produced a wound; while 8.5 artillery projectiles weighing 50 kg. were sufficient to put a man out of action. In other words, the effect of the artillery and rifle fire in 1904 was five or six times less than in 1870.

### Memorial de Artilleria.

#### March.

This is a particularly interesting issue but the chief item, a review of the work of the Spanish Experimental Artillery Committee during 1908, is too long for reproduction.

Among other items, however, some notes on modern coast artillery entitled "On the Right Road" are worthy of remark.

The theme is that although in the latest warships the necessities of naval tactics compel the adoption of the greatest possible number of the heaviest guns, it does not therefore follow that coast defences should do the same. On the contrary, for all purposes of defence, less costly and more manageable guns are both suitable and adequate. For, in considering such questions, it is not only the cost of the  $30.5 \ cm.$  (12 inch) gun and its ammunition which must be borne in mind, but also the complexity of the mounting and its liability to fail at the moment of need.

Moreover, there is the fact that the costly modern battleship is far from willing to enter into a pitched battle with a land fortress. Bombardment of towns, arsenals and forts may take place, but as has been well said "Maritime places of arms are attacked from the

sea, but taken from the land."

Thus, there is no lack of good reasons for limiting the size of guns. The less heavy calibres are more easily worked, less costly and of sufficient power to penetrate the armoured protection of the ship at ordinary ranges. A recent article by a French author who is a member of the superior Maritime Council, advances the theory that the 24 cm. (9.4 inch) gun should be looked upon as the type of heavy gun, and that now-a-days this calibre is considered upon as answering all purposes. The France Militaire is also quoted in favour of the 24 cm. This journal points out the greater efficiency of this gun's three rounds a minute in comparison with the 30 cm. one.

Furthermore, the present French Minister of Marine said in the Chamber that at Tsushima it was the hail of Japanese projectiles that destroyed the Russian ships; and for this all that is required is a gun capable of penetrating armour at 6,000 to 7,000 m. with rapid fire. The new 24 cm. gun, fulfils these conditions admirably, piercing 265 mm. (10.4 inch) at 6,000 m. 6,561 yards and firing 3

rounds a minute.

Lastly, the actual experience of the most recent naval battles is quoted to show that the terrible effect of the gun fire was not due to the relatively slow firing heavy ordnance, but to the annihilating results of the rain of explosive projectiles from the medium quick-

firing guns.

The official decision in Spain is to limit the calibre of heavy ordnance for coast defence to 24 cm., this being a gun of comparatively simple type and mechanism, while yet sufficiently powerful to penetrate armour at all ranges; and secondly, to raise the calibre of the medium guns from 15 to 19 cm. (5.9 to 7.4 inch). This latter is considered the maximum possible for a true Q.-F. gun, with, at the same time, sufficient power to attack and destroy superstructures, light armour, personnel, etc., at all ranges, using high explosive shell.

An article in the Russian Artillerieski Journal is also quoted as showing the tremendous destructive effect of high explosive shell.



The author, it is true, speaks of the Japanese shell being filled with various incendiary compounds, naphtha, petrol, etc., which assertions cannot be substantiated but, apart from that, his evidence of the extraordinary power of these shell is conclusive. He also, once again, supports the theory that ships of war do not fight on equal terms with land forts and that the latter invariably succumb to attacks in their land fronts.

This writer enlarges on the theory that it is not only those projectiles which penetrate the armour that sink and put ships out of action, but also those which strike above the water-line, or generally, those which destory the lightly armoured or unprotected parts; and these latter represent some 75 per cent of the displacement. In fact, the gravest danger to a ship arises from the water which enters through holes above the water-line.

Before the war there were two schools of opinion. One party held that a ship should be penetrated on the water-line, explosive effect being a minor consideration: while the other side relied on the destructive powers of heavy bursting charges on superstructures.

During the war, the Russian ammunition consisted chiefly of armour-piercing shell, the burster weighing from 1 to 34 per cent of the shell, with a delay action fuze which, by practice, proved so insensitive that it most often failed to act. The Japanese, on the other kand, had a torpedo shell with a melinite charge weighing up to 9.5 per cent of the projectile, and ignited by very sensitive percussion fuze. In a detailed description of the 28th July 1904 battle, the Russian author quotes the captain of the Sebastopol. The Japanese opened fire at 14 km. (8.6 miles) and continued shortening the range down to 3,700 m. (4,045 yards). The Russian shell, on bursting, gave smoke of exactly the same colour as that of the Japanese guns. (The Japanese shell produced black smoke). The Russians were, therefore, unable to observe their fire but the Japanese had no difficulty. Moreover, the Russian guns were not provided with telescopic sights. Consequently, from a range of 7,000 m. downwards, hits on the Russian ships (which almost invariably caused fire to break out) were frequent. The Sebastopol among other damage had two casemates destroyed; three holes on the water-line, forward; the chimneys and mizzen struck several times; the main mast with the antennae for wireless telegraphy destroyed; all the boats, searchlights and compasses were rendered unserviceable; the electric mechanism for the 15 cm. (5.9 in.) gun turrets was put out of action; the chase of the 47 mm gun was damaged, etc., etc., The damage in all ships was of a similarly serious character. The losses in men were, however, not important.

The damage inflicted by the shell with quick acting fuze was most dangerous, because it was very difficult to close the enormous holes made in the ship's side, into which the sea rushed with great violence at every roll; and also because not only were the fragments of the shell burst into the ship but also large slabs, often some metres square, of the steel side of the ship. The greater part of a

shell's fragments found their way into the ship's interior, but even what flew outwards destroyed torpedo netting, etc.

It is most desirable to use projectiles which will penetrate heavy armour and effect destruction inside the ship. And for this

purpose, shell with sensitive fuzes are necessary.

After this battle the Russian fleet returned to Port Arthur in sorry plight; some with a list to starboard, others to port; chimneys and rigging destroyed; chases of guns bent, etc., etc. The Japanese vessels suffered far less, for the reason that so many Russian shell failed to burst.

Tsushima afforded a convincing demonstration of the advantage of high explosive shell over simple armour-piercing projectiles.

Four ships of the line, the Osliabia, Swarow, Borodino and Alexander III were put out of action and sank, entirely through the effect of high explosive shell. Everything was destroyed, including the gun turrets, mountings and guns. In some cases, guns were

dismounted although not directly struck.

The effect of the shell was such that it was permissible to say that the action was decided by gun-fire. A curious feature was the fact that every Japanese shell bursting on a Russian ship immediatly started a fire. Whether the shells were filled with some combustible mixture or not, the fact remains that these fires broke out and at the same time the air was filled with an asphyxiating gas, which frustrated all attempts to extinguish the flames. So that sometimes a ship left the action practically intact, but unable to fight. The Swarow captain who gives the evidence says that on his ship, officers and men actually died from the effects of these poisonous fumes. The other ships were in a similar condition.

On the other hand, the Russian projectiles seemed to have little or no effect on the Japanese. The blinds were very numerous and even the shell which burst failed to fragment properly. The

Japanese lost only 527, killed and wounded together.

Generally, this battle shows that the strength of a ship or a coast fort lies not in its armour or protection, but in its power of fire; and this latter depends on the destruction and explosive energy of the shell It was not the Japanese superiority in speed, personnel, material, or number of guns that brought about their success in the naval actions, but the superiority of the torpedo shell with a large and powerful burster, over armour-piercing projectiles with a weak bursting charge.

The bombardment of the Russian fleet in Port Arthur roads gives further confirmation of the principle that gun power does not reside in the ability to hurl the maximum number of projectiles at the adversary unless these projectiles contain a heavy and powerful

burster.

The conclusions drawn with regard to coast artillery are then:—
Long ranges are most common in actions between ships and forts.
For these heavy high explosive shells are required. Armour-piercing projectiles should form a smaller proportion of the ammunition; they



are useless at long ranges, but are necessary for actions at short range.

Howitzers, or high angle ordnance with heavy shell, are required to attack decks of warships at all ranges.

Armour-piercing shot without burster should be abolished.

Protecting batteries require three classes of ordnance; heavy, medium and light. Batteries intended to repel assault require the heavy and light types only. Howitzers are suitably placed in second line batteries.

All long range guns should be provided with the escopic sights. The medium and light guns should be Q.-F.

The April number has several articles of interest.

A German journal is quoted as giving some account of the French experience in Morocco. The artillery did not come up to expectations, for the reason that the enemy invariably acted in small and rapidly moving parties and never presented a mass target. The French system of covering a zone of ground with a hail of shrapnel which is expected to be so effective against European troops, entirely failed of result in Morocco. Moreover the 75 mm. (2.95 in.) gun proved too heavy to travel with the troops in rapid movements in the field and, consequently, the supporting work had to be left to the antiquated mountain guns.

In regard to the Lebol rifle, criticism is directed against the bayonet and the magazine. It was found that, with the exception of the Foreign legion who, being accustomed to the Moor's methods, used their magazines with coolness and effect, all the troops wasted their ammunition in firing wildly, and very quickly exhausted the

supply.

The bayonet proved to be of an inconvenient shape and hampered the troops' movements on the march. Even in action it was not a success, the wound produced seldom sufficing to put the man out of action. Moreover, if the thrust met any solid resistance the blade, not infrequently, buckled. It is said that after the action of 15th May, nearly all the bayonets in one battalion of the Foreign legion were unserviceabe.

This number contains a curious instance of what the Spanish translator presumes to be Teutonic humour, though there is nothing in the original to show it is not meant to be taken seriously. This is nothing less than an attempt in a German publication to trace the invention or knowledge of gunpowder to the time of Moses.

The theory is set forth in such strange or philosophic (at the

reader's choice) statements as the following.

The Ark of the Covenant was nothing but a laboratory; Moses transmitted the secret of the manufacture of gunpowder to his successors Joshua and Gideon.

The God of the Israelites was simply a powder magazine; and it was powder in its various forms that Moses caused the Jews to worship.

But, as the secret was well kept, it is not to be wonderd at that the art of manufacturing explosives should have been lost in the course of time. In fact the successors of Gideon did not know how to utilise this method of intimidating the people except in an ineffectual manner, and their power was not long in passing into the hands of the kings, whom the priests were very careful not to initiate

into the mysteries of gunpowder manufacture.

A short notice of the question of submarines says that these have passed the experimental stage and have become an efficient weapon. The number and nature of the submarines possessed by a Naval Power form a factor of its power which cannot be ignored. At the same time the evolution of these boats has not arrived at the pitch of perfection which would enable them to be used on a preconcerted plan on the high seas. Their present characteristics are such that they can only be used for coast defence and otherwise in very exceptional circumstances. To extend these limits is the problem of the future. The employment of submarines at sea is a prospect which may well be considered as a coming possibility.

#### REVIEWS.

We have to acknowledge with thanks the receipt of the following new books:—

- 1. Strategy of the Franco-German War, by Major W. D. Bird, D.S.O. Price 6s. net. (Presented) Hugh Rees, Limited, London. 1909.
- 2. An Introduction to Military Geography, by Brigadier-General E. S. May, C.B., C.M.G., with maps. Price 8s. 6d. net (Presented) Hugh Rees, Limited, London, 1909.
- 3. Lectures on the Strategy of the Russo-Japanese War, by Major W. D. Bird, D.S.O. Price 4s. 6d. net. (Presented) Hugh Rees, Limited, London, 1909.
- 4. Sketch Map to Illustrate the Russo-Japanese War, 1904, with notes and references for Staff College Military History Examinations for Promotion. Price 2s. 6d. net. (Presented) Forster, Groom and Co., Limited, London, 1909.
- 5. A System of Free Gymnastics, by Sergeant-Major R. J. B. Betts, Price 1s. 6d. net. (Presented) Gale and Polden, Limited, London, 1909.
- 6. The Field Gunners' Catechism, by Major A. T. Anderson. R.F.A. Price 1s. 6d. net. (Presented) Gale and Polden, Limited, London.
- 7. The Magnetic Compass and How to Use It, by Captain R. F. Legge, Leinster Regiment. Price 6d. net. (Presented) Gale and Polden, Limited, London.





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We have to acknowledge with thanks the receipt of the following new books:—

- 1. Strategy of the Franco-German War, by Major W. D. Bird, D.S.O. Price 6s. net. (Presented) Hugh Rees, Limited, London. 1909.
- 2. An Introduction to Military Geography, by Brigadier-General E. S. May, C.B., C.M.G., with maps. Price 8s. 6d. net (Presented) Hugh Rees, Limited, London, 1909.
- 3. Lectures on the Strategy of the Russo-Japanese War, by Major W. D. Bird, D.S.O. Price 4s. 6d. net. (Presented) Hugh Rees, Limited, London, 1909.
- 4. Sketch Map to Illustrate the Russo-Japanese War, 1904, with notes and references for Staff College Military History Examinations for Promotion. Price 2s. 6d. net. (Presented) Forster, Groom and Co., Limited, London, 1909.
- 5. A System of Free Gymnastics, by Sergeant-Major R. J. B. Betts, Price 1s. 6d. net. (Presented) Gale and Polden, Limited, London, 1909.
- 6. The Field Gunners' Catechism, by Major A. T. Anderson. R.F.A. Price 1s. 6d. net. (Presented) Gale and Polden, Limited, London.
- 7. The Magnetic Compass and How to Use It, by Captain R. F. Legge, Leinster Regiment. Price 6d. net. (Presented) Gale and Polden, Limited, London.



